STN® Library and Information Science Training Program

SUGGESTED SOLUTIONS TO SKILLS PRACTICE PROBLEMS

note

The answers you will find in the Suggested Solutions provided may not exactly match your search results for the following reasons:

1. Most STN databases are updated with new records often, so the number of answers retrieved from a search and which answer is first, fifth, etc. can change daily.
2. Searching is an art and there are lots of different ways to go about a search that may be equally valid. Just because you did not do the search exactly as we did or choose the terms we chose, does not mean that you are wrong.

The solutions are intended to give you a general set of steps that we believe best address the search questions asked, and maybe even teach you a few new things along the way. Your professor or the STN Helpdesk can be of help if you have additional questions. Good luck!

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STN LIS Skills Practice Problems

STN® on the Web℠ – LIS Training Program web login site:
http://stnweb.cas.org/?USERTYPE=LIS

1. **In CAplus℠, perform keyword searches on the following questions.** Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness. Display the bibliographic information and abstract from three records from each search.

   A. Find information on the flavor or aroma components of blackberries.

   B. What has been determined about the amount of ammonia or ammonium salts that was released by the 1906 eruption of Vesuvius?

   C. Locate publications and patents dealing with research that Angela Belcher has done on nanowires that involve a virus known as M13 bacteriophage. What product is being targeted to use this new technology?

   D. Retrieve literature on genetic engineering applied to developing tomatoes with increased freeze protection. Note that freeze protection is also talked about using the terms "antifreeze protein."

   E. What kinds of materials have been used to adulterate saffron?

   F. A recent law requires mattresses to resist an open flame for at least 30 minutes before igniting in order to reduce the number of deaths from house fires. Locate patents on this technology issued after 2006. Brainstorm synonyms for your search terms to be as comprehensive as possible.

2. **How many patents about hydrogen fuel cells does Takahiro Kuriiwa have?**
   - Remember to review the article indexing to obtain additional search terms
   - Compare the results of at least two databases that contain patents (such as CAplus, USPAT2, LWPI, or USPATFULL)
   - Display three patent titles from each database

3. **Find information in the MEDLINE® database on job stress in the dental profession.**
   - Use various proximity operators to adjust the size and focus of your answer set
   - Use the appropriate no cost display format to evaluate and improve your answer set
   - Relevance rank the final answer set and display the titles of the five most relevant answers

4. **Choose a company of interest to you and find a recent patent filed by this company.**
   - Use the CAplus company name thesaurus and the Derwent Patent Assignee Codes (PACOs) in LWPI to identify variations on this company name and or subsidiaries
   - Using this information, perform a multifile patent search for this company in CAplus and LWPI
   - *No solution for this is provided as the answers will vary, but check your process against the Syngenta example in the workbook*

5. **Find patents on golf ball covers held by Acushnet.**
   - HINT: Search in at least three of the following databases: CAplus, LWPI, USPAT2, or EPFULL to compare your results

6. **What is the structure of the drug sumatriptan?**
    - What other names is this drug known by? (HINT: Remember to start in CAS REGISTRY^{SM} then cross over to CAplus to find relevant references)
    - Are there any references discussing its preparation? (HINT: The preparation role (PREP) might be helpful here)
    - If so, what are the names of some companies who have reported methods of preparing it?
    - Have any of the companies received a patent for this?

7. **Find articles on the Type 2 diabetes drug Byetta and its effect on weight loss.**
    - What other names is this drug known by?
    - Search in both CAplus and MEDLINE (HINT: Remember to remove duplicates before displaying the first three answers from each database)

8. **In 2005, a number of petroleum companies announced their intent to eliminate MTBE from gasoline due to drinking and ground water contamination concerns and continuing liability exposure.**
    - Find three journal review articles on this topic in CAplus (HINT: Use both left and right truncation (SLART) to enhance your search retrieval for water)

9. **Choose a drug or chemical of your choice.**
    - Locate other names that the drug or chemical are known by, then search in relevant databases and find recent patents and journal articles
    - *No solution for this is provided as the answers will vary, but check your search strategy against the multifile substance-based search in the workbook*

Search Question 1A: In CAplus, perform keyword searches on the following question. Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness.
Display the bibliographic information and abstract from three records from each search.

- Find information on the flavor or aroma components of blackberries

```
=> FILE CAPLUS

=> E FLAVOR/CT

E#   FREQUENCY    AT     TERM
--   ---------    --     ----
E1           3     7     FLAVOPUNCTELIA FLAVENTIOR/CT
E2           1     7     FLAVOPUNCTELIA PRAESIGNIS/CT
E3       21088    73 --> FLAVOR/CT
E4           0     2     FLAVOR (L) OFF-/CT
E5           0     6     FLAVOR (L) OFF-FLAVOR/CT
E6           0     2     FLAVOR (L) WARMED-OVER/CT
E7           0     5     FLAVOR (L) WARMED-OVER FLAVOR/CT
E8           2           FLAVOR NUCLEI/CT
E9           0     3     FLAVOR PRO 1000/CT
E10          0     3     FLAVOR PRO 400/CT
E11          0     2     FLAVOR QUANTUM NUMBER/CT
E12          0     1     FLAVOR-ENHANCING/CT

=> E E3+ALL

E13          0   BT1  Properties of food and feed (non-CA heading)/CT
E14      21088     -->  Flavor/CT
                      HNTE  Valid heading during volume 96 (1982)to
                            present.
                     NOTE The gustatory phenomenon and naturally
                            occurring flavors are indexed here. Formulated
                            and synthetic flavors are indexed at Flavoring
                            materials.
E15         13       OLD  Flavors/CT
E16                  UF   Flavour/CT
E17       3072       NT1  Bitterness/CT
E18       1999       NT1  Rancidity/CT
E19        772       NT1  Saltiness/CT
E20        749       NT1  Sourness/CT
E21       2532       NT1  Sweetness/CT
E22       1632       RT   Essences/CT
E23      10144       RT   Flavoring materials/CT
E24      28691       RT   Odor and Odorous substances/CT
E25       4138       RT   Olfaction/CT
E26       7095       RT   Taste/CT
E27                  RTCS (E)-2-Nonenal/CT
E28                  RTCS (E)-2-Octenal/CT
                       .
                       .
                       .
E84                  RTCS Trimethylpyrazine/CT
E85                  RTCS Vitamin PP/CT
********** END **********
```

Use EXPAND to see the terms near desired controlled term.

EXPAND to see all the Associated Terms.

```
=> S E14-E26

         21088 FLAVOR/CT
            13 FLAVORS/CT
             0 FLAVOUR/CT
          3072 BITTERNESS/CT
          1999 RANCIDITY/CT
           772 SALTINESS/CT
           749 SOURNESS/CT
          2532 SWEETNESS/CT
          1632 ESSENCES/CT
         10144 "FLAVORING MATERIALS"/CT
         28691 "ODOR AND ODOROUS SUBSTANCES"/CT
          4138 OLFACTION/CT
          7095 TASTE/CT
L1       65421  (FLAVOR/CT OR FLAVORS/CT OR FLAVOUR/CT OR BITTERNESS/CT OR
                 RANCIDITY/CT OR SALTINESS/CT OR SOURNESS/CT OR
                 SWEETNESS/CT OR ESSENCES/CT OR "FLAVORING MATERIALS"/CT
                 OR "ODOR AND ODOROUS SUBSTANCES"/CT OR OLFACTION/CT OR
                 TASTE/CT)

=> E AROMA/CT

E#   FREQUENCY    AT     TERM
--   ---------    --     ----
E86          0     2     AROM. VINYL ACETAL POLYMERS/CT
E87          0     2     AROM. VINYL POLYMERS/CT
E88          0     2 --> AROMA/CT
E89          0     2     AROMA JOY LUCKSMOD/CT
E90          1           AROMA LACTIS/CT
E91          2           AROMA NUMBER/CT
E92          0     1     AROMADENDR-7/CT
E93          0     2     AROMADENDR-7(15)-ENE/CT
E94          0    17     AROMADENDRENE/CT
E95          0     2     AROMADENDRENE, (+)-/CT
E96          0     2     AROMADENDRENE, (±)/CT
E97          1     9     AROMADENDRON/CT

=> E E88+ALL

E98          0   -->  Aroma/CT
E99      28691     USE  Odor and Odorous substances/CT
********** END **********

=> S E99
L2       28691 "ODOR AND ODOROUS SUBSTANCES"/CT
```

```
=> E BLACKBERRY/CT

E#   FREQUENCY    AT     TERM
--   ---------    --     ----
E100         1            BLACKADDER, THOMAS/CT
E101       180     2      BLACKBERRIES/CT
E102       526     9 --> BLACKBERRY/CT
E103         0    11      BLACKBERRY (L) CANNED/CT
E104         4            BLACKBERRY JUICE/CT
E105         4     8      BLACKBERRY YELLOW VEIN VIRUS/CT
E106         3     2      BLACKBIRD/CT
E107         2            BLACKBOARD/CT
E108        23     2      BLACKBOARDS/CT
E109       487     2      BLACKBODY/CT
E110       479    18      BLACKBODY RADIATION/CT
E111         0     1      BLACKBURNI/CT

=> E E102+ALL

E112       207   BT7  Organisms/CT
E113      4765     BT6  Eukaryota/CT
E114     19315       BT5  Embryophyta/CT
E115       500         BT4  Magnoliophyta/CT
E116       870           BT3  Magnoliopsida/CT
E117         5             BT2  Rosales/CT
E118       357               BT1  Rosaceae/CT
E119       526                 -->  Blackberry/CT
                                 HNTE Valid heading during volume 11
                                       (1917) to present.
                                 NOTE This heading is used only when the
                                      specific taxonomy cannot be
                                        established from the original
                                        document.
E120       180                   OLD  Blackberries/CT
********** END **********

=> S E119-E120

           526 BLACKBERRY/CT
           180 BLACKBERRIES/CT
L3         706 (BLACKBERRY/CT OR BLACKBERRIES/CT)

=> S L1 OR L2

L4       65421 L1 OR L2

=> S FLAVO? OR AROMA?

        162718 FLAVO?
        290913 AROMA?
        335133 AROM
         16593 AROMS
        343863 AROM
                 (AROM OR AROMS)
        511678 AROMA?
                 (AROMA? OR AROM)
L5      661294 FLAVO? OR AROMA?
```

```
=> S L4 OR L5

L6      688512 L4 OR L5

=> S L3 OR BLACKBERR?

          1216 BLACKBERR?
L7        1216 L3 OR BLACKBERR?

=> S L6 AND L7

L8         217 L6 AND L7

=> FOCUS

PROCESSING COMPLETED FOR L8
L9          217 FOCUS L8 1-

=> D SCAN

L9    217 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   17-1 (Food and Feed Chemistry)
TI   Determination of Aroma Compounds in Blackberry by GC/MS Analysis
ST   aroma compd detn blackberry GC MS
IT   Blackberry
       Odor and Odorous substances
         (determination of aroma compds. in blackberry by GC/MS anal.)
IT   Aromatic compounds
     RL: ANT (Analyte); ANST (Analytical study)
         (determination of aroma compds. in blackberry by GC/MS anal.)
IT   Mass spectrometry
         (gas chromatog. combined with; determination of aroma compds. in
         blackberry by GC/MS anal.)
IT   Gas chromatography
         (mass spectrometry combined with; determination of aroma compds.
           in blackberry by GC/MS anal.)
IT   67-47-0, 5-Hydroxymethylfurfural   77-92-9, Citric acid, analysis
     98-01-1, Furfural, analysis   620-02-0, 5-Methylfurfural   28564-
     83-2,2,3-Dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one   52480-43-
     0,4,5-Dimethylfurfural
     RL: ANT (Analyte); ANST (Analytical study)
         (determination of aroma compds. in blackberry by GC/MS anal.)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L9    217 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   17-13 (Food and Feed Chemistry)
TI   Sensory attributes of Carbernet Sauvignon wines made from vines
     with different water status
ST   sensory analysis wine irrigation water potential aroma flavor taste
```

Searching both controlled terms in the CA Lexicon and the basic index increases search results.

Using the FOCUS command brings the most relevant records to the top.

Use D SCAN to evaluate your search results.

(Continued on next page)

```
IT   Flavor
     Irrigation
     Leaf
       Odor and Odorous substances
     Stress, plant
       Taste
     Vitis vinifera
     Water potential
     Wine
        (sensory attributes of Carbernet Sauvignon wines made from vines
          with different water status)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L9    217 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   17 (Foods)
TI   Blackberry press-cake as a valuable raw material for production of
     natural aroma essence
ST   blackberries aroma concs; aroma concs blackberries
IT   Blackberries
        (aroma exts. from press cake of)
IT   Odors
        (from blackberry press cake)
IT   Carbonyl compounds, biological studies
     RL: BIOL (Biological study)
        (of aroma of blackberries)
IT   Acetals, biological studies
     Acids, biological studies
     Esters, biological studies
     RL: BIOL (Biological study)
        (of blackberry aroma)
IT   64-17-5, biological studies   513-86-0
     RL: BIOL (Biological study)
        (of blackberry aroma)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> D TI 1-5

L9   ANSWER 1 OF 217  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Plant genes for enzymes for biosynthesis of aromatic volatiles and
     their use in the development of plant products with novel flavors
     an aromas

L9   ANSWER 2 OF 217  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Kinetics method for the quantitation of anthocyanidins, flavonols,
     and flavones in foods

L9   ANSWER 3 OF 217  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Flavor and scent compositions, flavored food articles and
     beverages, as well as scented products that contain one or more
     spathulenols as a raw material and a spathulenol derivative

L9   ANSWER 4 OF 217  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Impact of growing environment on Chickasaw blackberry (Rubus L.)
     aroma evaluated by gas chromatography olfactometry dilution
     analysis

L9   ANSWER 5 OF 217  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Determination of Aroma Compounds in Blackberry by GC/MS Analysis
```

Remember to type 0 or END to exit a D SCAN.

Review the titles to the most recent answers.

=> D L9 5 ALL

L9 ANSWER 5 OF 217 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:564844 CAPLUS
DN 140:41000
ED Entered STN: 24 Jul 2003
TI Determination of **Aroma** Compounds in **Blackberry** by GC/MS Analysis
AU Turemis, N.; Kafkas, E.; Kafkas, S.; Kurkcuoglu, M.; Baser, K. H. C.
CS Faculty of Agriculture, University of Cukurova, Adana, 01330, Turk.
SO Chemistry of Natural Compounds (Translation of Khimiya Prirodnykh Soedinenii) (2003), 39(2), 174-176
CODEN: CHNCA8; ISSN: 0009-3130
PB Kluwer Academic/Consultants Bureau
DT Journal
LA English
CC 17-1 (Food and Feed Chemistry)
AB The **aromatic** composition of five **blackberry** cultivars (Bursa 2, Navaho, Nessy, Chester Thornless, and Jumbo) was studied. The Im-SPME (Immersion Solid Phase Micro Extraction) extraction technique was applied and the samples were analyzed by GC/MS. Furfural and its derivs. are the major **aromatic** compds. and 5-hydroxymethylfurfural was the most abundant compound in all the **blackberry** varieties.
ST **aroma** compd detn **blackberry** GC MS
IT **Blackberry**
Odor and Odorous substances
(determination of **aroma** compds. in **blackberry** by GC/MS anal.)
IT **Aromatic** compounds
RL: ANT (Analyte); ANST (Analytical study)
(determination of **aroma** compds. in **blackberry** by GC/MS anal.)
IT Mass spectrometry
(gas chromatog. combined with; determination of **aroma** compds. in **blackberry** by GC/MS anal.)
IT Gas chromatography
(mass spectrometry combined with; determination of **aroma** compds. in **blackberry** by GC/MS anal.)
IT 67-47-0, 5-Hydroxymethylfurfural 77-92-9, Citric acid, analysis 98-01-1, Furfural, analysis 620-02-0, 5-Methylfurfural 28564-83-2,2,3-Dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one 52480-43-0, 4,5-Dimethylfurfural
RL: ANT (Analyte); ANST (Analytical study)
(determination of **aroma** compds. in **blackberry** by GC/MS anal.)
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ames, B; Proc Nat Acad Sci USA 1993, V90, P7915 CAPLUS
(2) Arthur, C; Anal Chem 1990, V62, P2145 CAPLUS
(3) Georgilopoulos, D; Food Chem 1988, V28, P141 CAPLUS
(4) Georgilopoulos, D; Z Lebensm-Unters-Forsch 1987, V185, P299 CAPLUS
(5) Georgilopoulos, D; Z Lebensm-Unters-Forsch 1987, V184, P374 CAPLUS
(6) Gough, R; Small Fruits in the Home Garden 1996, P272
(7) Gulan, M; J Agric Food Chem 1973, V21, P741 CAPLUS
(8) Hatanaka, A; Phytochemistry 1993, V34, P1201 CAPLUS
(9) Hawthorne, S; J Chromatog 1992, V603, P185 CAPLUS
(10) Heinonen, I; J Agric Food Chem 1998, V46, P4107 CAPLUS
(11) Houchen, M; J Agric Food Chem 1972, V120, P170
(12) Nijssen, C; Volatile Compounds in Foods, 7th ed 1996
(13) Pelusio, F; J Agric Food Chem 1995, V43, P2138 CAPLUS
(14) Rizzolo, A; J High Resol Chromatogr 1992, V15, P472 CAPLUS
(15) Scanlan, R; J Agric Food Chem 1970, V18, P744 CAPLUS
(16) Wang, H; J Agric Food Chem 1996, V44, P701 CAPLUS

Search Question 1B: In CAplus, perform keyword searches on the following question. Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness. Display the bibliographic information and abstract from three records from each search.

- What has been determined about the amount of ammonia or ammonium salts that was released by the 1906 eruption of Vesuvius?

```
=> FILE CAPLUS

=> E AMMONIA

E1            1     AMMONHINS/BI
E2            3     AMMONI/BI
E3       211987 --> AMMONIA/BI
E4            1     AMMONIA12/BI
E5            2     AMMONIA15/BI
E6            3     AMMONIA15N/BI
E7            1     AMMONIA181/BI
E8            1     AMMONIA29/BI
E9            1     AMMONIA31/BI
E10           1     AMMONIA32/BI
E11           1     AMMONIAACETATE/BI
E12           1     AMMONIAAMIDE/BI

=> E AMMONIUM

E13           2     AMMONIUIM/BI
E14           1     AMMONIUIN/BI
E15      394816 --> AMMONIUM/BI
E16           1     AMMONIUM0/BI
E17           1     AMMONIUM1/BI
E18           2     AMMONIUMA/BI
E19           2     AMMONIUMACETALDEHYDE/BI
E20           1     AMMONIUMACETAMIDOBENZALFLUORENE/BI
E21          12     AMMONIUMACETATE/BI
E22           4     AMMONIUMACETIC/BI
E23           1     AMMONIUMACETONE/BI
E24           1     AMMONIUMACETONITRILE/BI

=> S AMMONI? AND VESUVIUS

         596899 AMMONI?
            584 VESUVIUS
L1           17 AMMONI? AND VESUVIUS
```

```
=> D SCAN

L1    17 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   8 (Mineralogical and Geological Chemistry)
TI   Ammonium Chloride Crystals from Vesuvius
IT   Wine
        (books, Verzeichnis den schweizerischen Weinlagen und
        Weinhandelsbezeichnungen)
IT   12125-02-9, Ammonium chloride
        (volcanic, from Vesuvius)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L1    17 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   8 (Mineralogical and Geological Chemistry)
TI   On the Minerals of the Fumaroles of the Recent Eruption of Etna and
     on the Existence of Boric Acid in the Present Fumaroles of Vesuvius
IT   Volcanoes
        (fumaroles of Etna, minerals of)
IT   Volcanoes
        (fumaroles of Vesuvius, H3BO3 in)
IT   Minerals
        (of volcanic fumaroles of Etna)
IT   10043-35-3, Boric acid
        (in volcanic fumaroles (Vesuvius))

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> S (AMMONI? OR NH3? OR NH4?) AND VESUVIUS

        596899 AMMONI?
        273055 NH3?
        383523 NH4?
           584 VESUVIUS
L2          39 (AMMONI? OR NH3? OR NH4?) AND VESUVIUS

=> FOCUS L2

PROCESSING COMPLETED FOR L2
L3           39 FOCUS L3 1-

=> D IBIB ABS 1-3

L3   ANSWER 1 OF 39  CAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:        1907:1140  CAPLUS
DOCUMENT NUMBER:         1:1140
ORIGINAL REFERENCE NO.:  1:282a-b
TITLE:                   An Hypothesis for the Formation of Ammonia and
                         Ammonium Chloride in Volcanic Eruptions
AUTHOR(S):               Rosenbach, O.
SOURCE:                  Naturw. Wochschr. (1907), 21, 740-43
DOCUMENT TYPE:           Journal
LANGUAGE:                Unavailable
AB    The author suggests, as a possible source of the great quantities of
      NH2 and NH4Cl that have been observed in connection with the recent and
      earlier ejecta from Vesuvius, atmospheric nitrogen, which, highly
      heated, has been converted by a sort of contact process into ammonia
      and ammonium compounds in presence of H2O and HCl. Suggestions are
      offered for testing this hypothesis.
```

Addition of "NH3" and "NH4" to the search query results in 22 more answers.

FOCUS the answer set for the most relevant answers.

(Continued on next page)

L3 ANSWER 2 OF 39 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1908:14047 CAPLUS
DOCUMENT NUMBER: 2:14047
ORIGINAL REFERENCE NO.: 2:3043i
TITLE: Sal **Ammoniac** from **Vesuvius**
AUTHOR(S): Goldschmidt, V.; Schroder, R.
SOURCE: Heidelberg Z. Kryst. (1908), 45, 221-;plate,fig.
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB A crystallographical description.

L3 ANSWER 3 OF 39 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1906:101255 CAPLUS
DOCUMENT NUMBER: 0:101255
TITLE: Action of **ammonium** chloride on analcite and leucite
AUTHOR(S): Clarke, Frank W.; Steiger, George
SOURCE: Zeitschrift fuer Anorganische Chemie (1900), 23, 135-45
From: J. Chem. Soc., Abstr. 78, II, 219 1900
CODEN: ZACMAH
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB In a previous paper (this volume, ii, 25), it was shown that analcite, when heated at 350° in an open crucible with **ammonium** chloride, gave up part of its soda and absorbed some **ammonia**; at a higher temperature, **ammonia** is again liberated. Further experiments have now been made on analcite from North Table Mountain, near Golden, Colorado, the composition of which is given under I. When the material is heated at 350° in a sealed tube with **ammonium** chloride, the whole of the soda is converted into sodium chloride, and all the liberated **ammonia** absorbed by the silicate; the residue has the composition **NH4AlSi2O6**, and appears to be the first **ammonium** silicate that has been prepared. In the presence of excess of free **ammonia** there is no further absorption of **ammonia.** On boiling this **ammonium** compound with caustic soda solution, the whole of the **ammonia** is expelled and sodium again taken up. The product previously obtained with analcite is now to be regarded as a mixture. Leucite (from **Vesuvius**, anal. II.), when heated in a sealed tube with **ammonium** chloride, yields the same compound, **NH4AlSi2O6**, as does analcite. When this **ammonium** leucite, the composition of which is given under III, is fused with calcium chloride, a product approximating in composition to the corresponding calcium salt, CaAl2Si4O12, is obtained. This **ammonium** leucite is not a metasilicate, as shown by the fact that no soluble silica is liberated when the material is ignited. The original abstract includes a table. Preliminary experiments show that several other zeolites behave in a similar manner when heated with **ammonium** chloride.

Search Question 1C: In CAplus, perform keyword searches on the following question. Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness. Display the bibliographic information and abstract from three records from each search.

- Locate publications and patents dealing with research that Angela Belcher has done on nanowires that involve a virus known as M13 bacteriophage. What product is being targeted to use this new technology?

```
=> FILE CAPLUS

=> E BELCHER A/AU

E1            1     BELCHENKO YURI I/AU
E2            1     BELCHER/AU
E3            2 --> BELCHER A/AU
E4            1     BELCHER A I/AU
E5            1     BELCHER A J/AU
E6            7     BELCHER A M/AU
E7            2     BELCHER A R/AU
E8            1     BELCHER A S B/AU
E9            1     BELCHER ABIGAIL K/AU
E10           1     BELCHER ALAN/AU
E11           1     BELCHER ALAN E/AU
E12           1     BELCHER ALBERT L/AU

=> E

E13           1     BELCHER ALBERT N/AU
E14           1     BELCHER ALISON J/AU
E15           6     BELCHER ANGELA/AU
E16          68     BELCHER ANGELA M/AU
E17           2     BELCHER ANN R/AU
E18           2     BELCHER ANNABELLE M/AU
E19           1     BELCHER ANNE/AU
E20           1     BELCHER ANNE C/AU
E21           3     BELCHER ANNE M/AU
E22           1     BELCHER ANNE MCGREGOR/AU
E23           1     BELCHER ANTHONY/AU
E24           1     BELCHER ARNOLD L/AU

=> S E3 OR E6 OR E15-E16

              2 "BELCHER A"/AU
              7 "BELCHER A M"/AU
              6 "BELCHER ANGELA"/AU
             68 "BELCHER ANGELA M"/AU
L1           83 "BELCHER A"/AU OR "BELCHER A M"/AU OR ("BELCHER ANGELA"/AU
                 OR "BELCHER ANGELA M"/AU)
```

A good habit to develop is to always EXPAND on the author's name. One can not be sure how the author's first name appears – either using initials or spelled out.

```
=> E NANOWIRE

E25          3     NANOWINDOW/BI
E26          4     NANOWINDOWS/BI
E27       9692 --> NANOWIRE/BI
E28          1     NANOWIREA/BI
E29          9     NANOWIRED/BI
E30          1     NANOWIREE/BI
E31      12781     NANOWIRES/BI
E32          1     NANOWIRESIN/BI
E33         23     NANOWIRING/BI
E34          3     NANOWIRINGS/BI
E35          1     NANOWISKER/BI
E36          3     NANOWISKERS/BI

=> S E27-E31

          9692 NANOWIRE/BI
         12781 NANOWIRES/BI
         13377 NANOWIRE/BI
                 ((NANOWIRE OR NANOWIRES)/BI)
             1 NANOWIREA/BI
             9 NANOWIRED/BI
             1 NANOWIREE/BI
         12781 NANOWIRES/BI
L2       13380 (NANOWIRE/BI OR NANOWIREA/BI OR NANOWIRED/BI OR
                NANOWIREE/BI OR NANOWIRES/BI)

=> S L1 AND L2

L3          18 L1 AND L2

=> S L3 AND M13 (10A) BACTERIOPHAGE

          4525 M13
         32229 BACTERIOPHAGE
          7188 BACTERIOPHAGES
         34327 BACTERIOPHAGE
                 (BACTERIOPHAGE OR BACTERIOPHAGES)
           834 M13 (10A) BACTERIOPHAGE
L4           9 L3 AND M13 (10A) BACTERIOPHAGE
```

```
=> D SCAN

L4    9 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   56-0 (Nonferrous Metals and Alloys)
     Section cross-reference(s): 76, 77
TI   Viruses as vehicles for growth, organization and assembly of
     materials
ST   review virus metal nanowire semiconductor magnetic material growth
IT   Bacteriophage
     Coliphage M13
     Magnetic materials
       Nanowires
     Semiconductor materials
     Tobacco mosaic virus
     Virus
        (viruses as vehicles for growth, organization and assembly of
        materials)
IT   Metals, processes
     RL: PEP (Physical, engineering or chemical process); PYP (Physical
     process); PROC (Process)
        (viruses as vehicles for growth, organization and assembly of
        materials)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L4    9 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Virus enabled synthesis and assembly of nanowires for Lithium ion
     battery electrode

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> FOCUS

PROCESSING COMPLETED FOR L4
L5            9 FOCUS L4 1-
```

=> D L5 1-3 BIB ABS

L5 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2005:371279 CAPLUS
DN 142:425655
TI Creating novel protein interactions for the assembly of scaffolds for electronic, optical, magnetic, semiconducting, and biotechnological applications using viruses
IN **Belcher, Angela M.**; Peele, Beau; Nam, Ki Tae
PA Board of Regents, the University of Texas System, USA; Massachusetts Institute of Technology
SO PCT Int. Appl., 81 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005037856	A2	20050428	WO 2004-US33943	20041015

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU	2004282188	A2	20050428	AU 2004-282188	20041015
	AU 2004282188	A9	20050428		
	AU 2004282188	A1	20050428		
	CA 2542674	A1	20050428	CA 2004-2542674	20041015
	US 2005170336	A1	20050804	US 2004-965227	20041015
	EP 1682568	A2	20060726	EP 2004-795143	20041015

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR

PRAI	US 2003-511102P	P	20031015
	WO 2004-US33943	W	20041015

AB One-dimensional ring structures from M13 viruses were constructed by two incorporating two novel functions into viral capsid proteins. These bifunctional viruses displayed an anti-streptavidin peptide and hexahistidine peptide at opposite ends of the virus as pIII and pIX fusions. A heterobifunctional linker mol. with streptavidin at one end and nickel nitrilotriacetic acid (NiNTA) at the other was constructed. Stoichiometric addition of the streptavidin-NiNTA linker mol. led to the reversible formation of virus-based nanorings with circumferences corresponding to lengths of the packagable DNAs. These virus-based ring structures can be further engineered to nucleate inorg. materials and form metallic, magnetic, or semiconductor nanorings using trifunctionalized viruses. Use of these bifunctional systems and trifunctional systems including binding sites in the middle of the virus is demonstrated.

(Continued on next page)

L5 ANSWER 2 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2005:673047 CAPLUS
DN 143:185129
TI Inorganic **nanowires**
IN **Belcher, Angela M.**; Mao, Chuanbin; Solis, Daniel J.
PA Board of Regents, The University of Texas System, USA; Massachusetts Institute of Technology, Inc.
SO PCT Int. Appl., 56 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005067683	A2	20050728	WO 2005-US75	20050105
	WO 2005067683	A3	20051208		
	WO 2005067683	A8	20061214		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, SM

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2005221083		A1	20051006	US 2004-976179	20041029
	CA 2552511	A1	20050728	CA 2005-2552511	20050105
	EP 1730337	A2	20061213	EP 2005-726223	20050105

R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR

	CN 1930333	A	20070314	CN 2005-80006952	20050105
PRAI	US 2004-534102P	P	20040105		
	US 2004-976179	A	20041029		
	WO 2005-US75	W	20050105		

AB A method is proposed to control the size and size distributions of **nanowires** without the need of a size separation step and which allows these **nanowires** to be interconnected in a desired manner. An inorg. **nanowire** having an organic scaffold substantially removed from the inorg. **nanowire**, the inorg. **nanowire** consisting essentially of fused inorg. nanoparticles substantially free of the organic scaffold, and methods of making same. For example, a virus-based scaffold for the synthesis of single crystal ZnS, CdS and free-standing L10 CoPt and FePt **nanowires** can be used, with the means of modifying substrate specificity through standard biol. methods. Peptides can be selected through an evolutionary screening process that exhibit control of composition, size, and phase during nanoparticle nucleation were expressed on the highly ordered

(Continued on next page)

filamentous capsid of the **M13 bacteriophage.** The incorporation of specific, nucleating peptides into the generic scaffold of the M13 coat structure can provide a viable template for the directed synthesis of a variety of materials including semiconducting and magnetic materials. Removal of the viral template via annealing can promote oriented aggregation-based crystal growth, forming individual crystalline **nanowires.** The unique ability to interchange substrate specific peptides into the linear self-assembled filamentous construct of the M 13 virus introduces a material tunability not seen in previous synthetic routes. Therefore, this system provides a genetic tool kit for growing and organizing **nanowires** from various materials including semiconducting and magnetic materials.

L5 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:477459 CAPLUS
DN 139:171765
TI Viral assembly of oriented quantum dot **nanowires**
AU Mao, Chuanbin; Flynn, Christine E.; Hayhurst, Andrew; Sweeney, Rozamond; Qi, Jifa; Georgiou, George; Iverson, Brent; **Belcher, Angela M.**
CS Departments of Chemistry and Biochemistry, University of Texas, Austin, TX, 78712, USA
SO Proceedings of the National Academy of Sciences of the United States of America (2003), 100(12), 6946-6951
CODEN: PNASA6; ISSN: 0027-8424
PB National Academy of Sciences
DT Journal
LA English
AB The highly organized structure of **M13 bacteriophage** was used as an evolved biol. template for the nucleation and orientation of semiconductor **nanowires.** To create this organized template, peptides were selected by using a pIII phage display library for their ability to nucleate ZnS or CdS nanocrystals. The successful peptides were expressed as pVIII fusion proteins into the crystalline capsid of the virus. The engineered viruses were exposed to semiconductor precursor solns., and the resultant nanocrystals that were templated along the viruses to form **nanowires** were extensively characterized by using high-resolution anal. electron microscopy and photoluminescence. ZnS nanocrystals were well crystallized on the viral capsid in a hexagonal wurtzite or a cubic zinc-blende structure, depending on the peptide expressed on the viral capsid. Electron-diffraction patterns showed single crystal-type behavior from a polynanocryst. area of the **nanowire** formed, suggesting that the nanocrystals on the virus were preferentially oriented with their [001] perpendicular to the viral surface. Peptides that specifically directed CdS nanocrystal growth were also engineered into the viral capsid to create wurtzite CdS virus-based **nanowires.** Lastly, heterostructured nucleation was achieved with a dual-peptide virus engineered to express two distinct peptides within the same viral capsid. This work represents a genetically controlled biol. synthesis route to a semiconductor nanoscale heterostructure.
RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> D L5 4-9 BIB

L5 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2005:470347 CAPLUS
DN 143:168348
TI Programmable Assembly of Nanoarchitectures Using Genetically Engineered Viruses
AU Huang, Yu; Chiang, Chung-Yi; Lee, Soo Kwan; Gao, Yan; Hu, Evelyn L.; De Yoreo, James; **Belcher, Angela M.**
CS Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SO Nano Letters (2005), 5(7), 1429-1434
CODEN: NALEFD; ISSN: 1530-6984
PB American Chemical Society
DT Journal
LA English
RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:13517 CAPLUS
DN 140:244119
TI Virus-based toolkit for the directed synthesis of magnetic and semiconducting **nanowires**
AU Mao, Chuanbin; Solis, Daniel J.; Reiss, Brian D.; Kottmann, Stephen T.;Sweeney, Rozamond Y.; Hayhurst, Andrew; Georgiou, George; Iverson, Brent;
Belcher, Angela M.
CS USA
SO Science (Washington, DC, United States) (2004), 303(5655), 213-217
CODEN: SCIEAS; ISSN: 0036-8075
PB American Association for the Advancement of Science
DT Journal
LA English
RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:657097 CAPLUS
TI Virus-based genetic toolkit for the directed synthesis of magnetic and semiconducting **nanowires**
AU **Belcher, Angela M.**; Mao, Chuanbin; Solis, Daniel J.; Reiss, Brian D.; Kottmann, Stephen T.; Sweeney, Rozamond Y.; Georgiou, George; Iverson, Brent
CS Department of Materials Science and Engineering and Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SO Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004 (2004), COMSCI-005 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69FTZ8
DT Conference; Meeting Abstract
LA English

L5 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:248143 CAPLUS
TI Virus enabled synthesis and assembly of **nanowires** for Lithium ion battery electrode
AU Nam, Ki Tae; Kim, Dong-Wan; Yoo, Pil J.; Chiang, Chung-Yi; Meethong, Nonglak; Hammond, Paula T.; Chiang, Yet-Ming; **Belcher, Angela M.**
CS Department of Materials Science & Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SO Abstracts of Papers, 231st ACS National Meeting, Atlanta, GA, United States, March 26-30, 2006 (2006), INOR-817 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69HYEC
DT Conference; Meeting Abstract; (computer optical disk)
LA English

L5 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:838214 CAPLUS
DN 140:62866
TI Viruses as vehicles for growth, organization and assembly of materials
AU Flynn, Christine E.; Lee, Seung-Wuk; Peelle, Beau R.; **Belcher, Angela M.**
CS Massachusetts Institute of Technology, Cambridge, MA, USA
SO Acta Materialia (2003), 51(19), 5867-5880
CODEN: ACMAFD; ISSN: 1359-6454
PB Elsevier Ltd.
DT Journal; General Review
LA English
RE.CNT 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 9 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2005:190435 CAPLUS
TI Biological scaffolds for the peptide directed assembly of nanoscale materials and devices
AU Solis, Daniel J.; Mao, Chuanbin; Reiss, Brian; **Belcher, Angela M.**
CS Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SO Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, 2005 (2005), INOR-041 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69GQMP
DT Conference; Meeting Abstract
LA English

Search Question 1D: In CAplus, perform keyword searches on the following question. Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness. Display the bibliographic information and abstract of three records from each search.

- Retrieve literature on genetic engineering applied to developing tomatoes with increased freeze protection. Note that freeze protection is also talked about using the terms "antifreeze protein."

```
=> FILE CAPLUS

=> S TOMATO AND FREEZING

L1     657 TOMATO AND FREEZING

=> D SCAN

L1    657 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   11-8 (Plant Biochemistry)
TI   Down-regulating α-galactosidase enhances freezing tolerance in
     transgenic petunia
ST   transgenic Petunia alpha galactosidase freezing tolerance raffinose
     metab
IT   Gene, plant
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (Lea-Gal; down-regulating α-galactosidase enhances
        freezing tolerance in transgenic petunia)
IT   Adaptation, plant
     Lycopersicon esculentum
     Petunia hybrida
     Transformation, genetic
        (down-regulating α-galactosidase enhances freezing
        tolerance in transgenic petunia)
IT   Carbohydrates, biological studies
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (down-regulating α-galactosidase enhances freezing
        tolerance in transgenic petunia)
IT   Stress, plant
        (freezing; down-regulating α-galactosidase enhances
        freezing tolerance in transgenic petunia)
IT   50-99-7, Glucose, biological studies   57-48-7, Fructose, biological
     studies   57-50-1, Sucrose, biological studies   59-23-4, Galactose,
     biological studies   470-55-3, Stachyose   512-69-6, Raffinose
     9005-25-8, Starch, biological studies   9025-35-8, α-Galactosidase
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (down-regulating α-galactosidase enhances freezing
        tolerance in transgenic petunia)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1
```

```
L1    657 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   17-10 (Food and Feed Chemistry)
TI   Studies on the morphological traits and chemical composition of the
     fruit of six tomato cultivars recommended as raw material for
     freezing
ST   tomato compn freezing
IT   Dietary fiber
       (composition of fruits of tomato cultivars recommended for
       freezing)
IT   Carbohydrates, biological studies
     Carotenes, biological studies
     Chlorophylls, biological studies
     Nitrates, biological studies
     Nitrites
     RL: BOC (Biological occurrence); BSU (Biological study,
         unclassified);
     BIOL (Biological study); OCCU (Occurrence)
       (composition of fruits of tomato cultivars recommended for
       freezing)
IT   Tomato
       (frozen; composition of fruits of tomato cultivars recommended
       for freezing)
IT   Frozen foods
       (tomatoes; composition of fruits of tomato cultivars
       recommended for freezing)
IT   9001-05-2, Catalase   9001-62-1, Lipase   9003-99-0, Peroxidase
     RL: BAC (Biological activity or effector, except adverse); BSU
       (Biological study, unclassified); BIOL (Biological study)
       (composition of fruits of tomato cultivars recommended for
       freezing)
IT   50-81-7, Vitamin C, biological studies   502-65-8, Lycopene
       7235-40-7, β-Carotene   9000-69-5, Pectin   9012-27-5, Protopectin
     RL: BOC (Biological occurrence); BSU (Biological study,
       unclassified);
     BIOL (Biological study); OCCU (Occurrence)
       (composition of fruits of tomato cultivars recommended for
       freezing)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> E ANTIFREEZE PROTEINS/CT

E#   FREQUENCY    AT     TERM
--   ---------    --     ----
E1        1040     8     ANTIFREEZE/CT
E2           0     2     ANTIFREEZE GLYCOPROTEINS/CT
E3           0     2 --> ANTIFREEZE PROTEINS/CT
E4        1593     2     ANTIFREEZE SUBSTANCES/CT
E5           0     1     ANTIFREEZING/CT
E6           0     2     ANTIFREEZING AGENTS/CT
E7           0     1     ANTIFRICTION/CT
E8           0     2     ANTIFRICTION ABRASION-RESISTANT COATING
                         MATERIALS/CT
E9           0     3     ANTIFRICTION ABRASION-RESISTANT MATERIALS/CT
E10          0     2     ANTIFRICTION AGENTS/CT
E11          0     2     ANTIFRICTION COATINGS/CT
E12          0     2     ANTIFRICTION LUBRICATING OIL ADDITIVES/CT
```

```
=> E E3+ALL

E13          0   -->  Antifreeze proteins/CT
E14               USE  Proteins (L) antifreeze/CT
********** END **********

=> E E14+ALL

E15      11957   BT3  Chemical compounds/CT
E16      11419     BT2  Macromolecular compounds/CT
E17      11957   BT3  Chemical compounds/CT
E18      46989     BT2  Organic compounds/CT
E19     907393       BT1  Proteins/CT
E20                    -->  Proteins (L) antifreeze/CT
E21                      OLD  Proteins, specific or class (L)
                              antifreeze/CT
E22                      UF   Antifreeze proteins/CT
E23                      UF   THP proteins/CT
E24                      UF   Thermal hysteresis proteins/CT
********** END **********

=> S ANTIFREEZE (S) (PROTEIN? OR GENE OR THP OR THERMAL HYSTERESIS)

L2        1114 ANTIFREEZE (S) (PROTEIN? OR GENE OR THP OR THERMAL
                  HYSTERESIS)

=> E TOMATO/CT

E#   FREQUENCY    AT     TERM
--   ---------    --     ----
E25          0     2     TOMATILLO/CT
E26          0     1     TOMATIS/CT
E27      17246     9 --> TOMATO/CT
E28          0     3     TOMATO (L) CANNED/CT
E29          0     2     TOMATO (L) DISEASE/CT
E30          0     2     TOMATO (L) DISEASE, EARLY BLIGHT/CT
E31          0     2     TOMATO (L) DISEASE, LATE BLIGHT/CT
E32          0     2     TOMATO (L) DISEASE, WILT/CT
E33          0     2     TOMATO (L) DWARF/CT
E34          0     3     TOMATO (L) FROZEN/CT
E35          0     2     TOMATO (L) L. CHEESMANII/CT
E36          0     2     TOMATO (L) L. CHEESMANII MINOR/CT

=> E E27+ALL

E37      72359   BT3  Food/CT
E38          0     BT2  Plant-derived food (non-CA heading)/CT
E39      16651       BT1  Vegetable/CT
E40      17246         -->  Tomato/CT
                         HNTE Valid heading during volume 76 (1972) to
                              present.
E41       6023           OLD  Tomatoes/CT
E42                      UF   Lycopersicon lycopersicum/CT
E43                      UF   Solanum lycopersicum/CT
E44       1533           RT   Tomato juice/CT
E45        692           RT   Tomato products/CT
E46                      RTCS Lycopene/CT
********** END **********
```

Develop a free text query from the controlled indexing terms.

```
=> S E40-E46

L3       29273 (TOMATO/CT OR TOMATOES/CT OR "LYCOPERSICON
               LYCOPERSICUM"/CT OR
               "SOLANUM LYCOPERSICUM"/CT OR "TOMATO JUICE"/CT OR "TOMATO
               PRODUCTS"/CT OR LYCOPENE/CT

=> S L2 AND L3

L4           3 L2 AND L3

=> D IBIB ABS HITIND 1-3

L4   ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:        1997:687812  CAPLUS
DOCUMENT NUMBER:         128:3163
TITLE:                   The research on introducing flounder antifreeze
                         protein gene (afp) into tomato
AUTHOR(S):               Huang, Yong-Fen; Wang, Qing-Yin; Fu, Gui-Yong;
                         Zhao, Xiao-Xiang; Yang, Zhi-Xing
CORPORATE SOURCE:        Department Biology, Harbin Normal University,
                         Harbin, 150080, Peop. Rep. China
SOURCE:                  Shengwu Huaxue Zazhi (1997), 13(4), 418-422
                         CODEN: SHZAE4; ISSN: 1000-8543
PUBLISHER:               Zhongguo Shengwu Huaxue Yu Fenzi Shengwu Xuehui
DOCUMENT TYPE:           Journal
LANGUAGE:                Chinese
AB   Antifreeze protein gene (afp) which is integrated into the Ti
     plasmid pMon322, was introduced into tomato via the pollen-tube
     pathway and ovary injection.  The transgenic plants of D1 and D2
     generation produced afp DNA on Southern blot.  The assay of cold
     resistance in the filed showed that transgenic plants could grow
     better than control under the average temperature that is 4.4°C below
     normal year in earlier spring, meanwhile the fatal temperature
     dropped 2°C.  Thus, AFP gene has been integrated into the transgenic
     plants genome and expressed.
CC   17-10 (Food and Feed Chemistry)
ST   flounder antifreeze protein gene tomato
IT   Proteins, specific or class
     RL: BPR (Biological process); BSU (Biological study, unclassified);
         BIOL
     (Biological study); PROC (Process)
        (antifreeze; research on introducing flounder
        antifreeze protein gene (afp) into tomato)
IT   Plasmids
        (pMon322; research on introducing flounder antifreeze
        protein gene (afp) into tomato)
IT   Flounder
     Temperature effects, biological
       Tomato
        (research on introducing flounder antifreeze protein
        gene (afp) into tomato)
                    :
                    :
                    :
```

L4 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1991:672544 CAPLUS
DOCUMENT NUMBER: 115:272544
TITLE: Expression of **antifreeze proteins** in transgenic plants
AUTHOR(S): Hightower, Robin; Baden, Cathy; Penzes, Eva; Lund, Peter; Dunsmuir, Pamela
CORPORATE SOURCE: DNA Plant Technol. Corp., Oakland, CA, 94608, USA
SOURCE: Plant Molecular Biology (1991), 17(5), 1013-21
CODEN: PMBIDB; ISSN: 0167-4412
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The quality of frozen fruits and vegetables can be compromised by the damaging effects of ice crystal growth within the frozen tissue. **Antifreeze proteins** in the blood of some polar fishes have been shown to inhibit ice recrystn. at low concns. In order to determine whether expression of **genes** of this type confers improved freezing properties to plant tissue, transgenic tobacco and tomato plants were produced which express **genes** encoding **antifreeze proteins.** The afa3 **antifreeze gene** was expressed at high steady-state mRNA levels in leaves from transformed plants, but no inhibition of ice recrystn. in tissue exts. was detected. However, both mRNA and fusion **proteins** were detectable in transgenic tomato tissue containing a chimeric **gene** encoding a fusion **protein** between truncated staphylococcal **protein** A and **antifreeze protein.** Furthermore, ice recrystn. inhibition was detected in this transgenic tissue.

CC 3-4 (Biochemical Genetics)
Section cross-reference(s): 11, 12

ST **antifreeze protein gene** transgenic tomato potato

IT Tobacco
Tomato
(transgenic, **antifreeze protein gene** afa3 expression in)

IT **Proteins**, specific or class
RL: BIOL (Biological study)
(**antifreeze**, synthetic **gene** afa3 for, expression in transgenic tomato and tobacco of)

IT **Gene** and Genetic element, plant
RL: BIOL (Biological study)
(synthetic, afa3, for **antifreeze protein**, expression in transgenic tomato and potato of)

IT Transformation, genetic
(transgenosis, of tomato, with synthetic **antifreeze protein gene** afa3)

L4 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1991:201143 CAPLUS
DOCUMENT NUMBER: 114:201143
TITLE: Recombinant **antifreeze proteins** and their use
INVENTOR(S): Warren, Gareth J.; Mueller, Gunhild M.; McKown, Robert L.; Dunsmuir, Pamela
PATENT ASSIGNEE(S): DNA Plant Technology Corp., USA
SOURCE: PCT Int. Appl., 113 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9013571	A1	19901115	WO 1990-US2626	19900510
W: AU, CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE				
US 5118792	A	19920602	US 1989-350481	19890510
CA 2056434	A1	19901111	CA 1990-2056434	19900510
AU 9058143	A	19901129	AU 1990-58143	19900510
AU 648028	B2	19940414		
EP 472662	A1	19920304	EP 1990-909325	19900510
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, LU, NL, SE				
JP 04505329	T	19920917	JP 1990-508721	19900510

PRIORITY APPLN. INFO.: US 1989-350481 A 19890510
US 1990-507716 A 19900410
WO 1990-US2626 A 19900510

AB **Antifreeze proteins** (H2N)-X1-X2-X3-(CO2H) (X1 = amino acid, **protein**, non-amino acid moiety; X2 = polypeptide containing ≥2 LTAAN AAAAAA or homologous sequences; X3 = nothing, peptide) suppress ice crystal growth. A plasmid encoding a **protein** consisting of **protein** A fused to **antifreeze protein** Saf5 (i.e. MAA DTASD AAAAAA (LTAAN AAAAAA)4ATAA was constructed. The protein was produced in recombinant Escherichia coli and yeast. Yeast containing the fusion protein had better resistance to freeze-thawing than those not containing the fusion protein. **Antifreeze proteins** alone (i.e. not fused to another **protein**) also displayed **antifreeze** properties.

IC ICM C07K007-10
ICS C07K013-00; C12N015-12; C12N015-81

CC 3-4 (Biochemical Genetics)
Section cross-reference(s): 6

ST **antifreeze protein** recombinant; ice crystal formation inhibition protein

IT Plasmid and Episome
(2964-AFNB, **antifreeze protein gene** on, expression in tomato of)

IT Plasmid and Episome
(2964-AFSB, **antifreeze protein gene** on, expression in tomato of)

IT Escherichia coli
Yeast
(expression in, of **genes** for **antifreeze proteins**)

IT Molecular cloning
(of **antifreeze protein genes**, in Escherichia coli and yeast and plants)

IT **Protein** sequences
(of **antifreeze proteins**, complete)

IT Plasmid and Episome
(pCHIT-AFNB, **antifreeze protein gene** on, expression in tobacco of)

⋮

```
=> E STRESS, PLANT/CT

E#   FREQUENCY    AT     TERM
--   ---------    --     ----
E47          0     5     STRESS, MICROBIAL (L) OSMOTIC/CT
E48          0     6     STRESS, MICROBIAL (L) TOXIC/CT
E49      18440    12 --> STRESS, PLANT/CT
E50          0     6     STRESS, PLANT (L) ACIDITY/CT
E51          0     6     STRESS, PLANT (L) ALUMINUM/CT
E52          0     6     STRESS, PLANT (L) ALUMINUM EXCESS/CT
E53          0     6     STRESS, PLANT (L) AMMONIUM EXCESS/CT
E54          0     6     STRESS, PLANT (L) ANAEROBIC/CT
E55          0     6     STRESS, PLANT (L) BORON DEFICIENCY/CT
E56          0     6     STRESS, PLANT (L) BORON EXCESS/CT
E57          0     6     STRESS, PLANT (L) CHEM./CT
E58          0     7     STRESS, PLANT (L) COLD/CT

=> E E49+ALL

E59          0   BT2  Biological processes and phenomena (non-CA
                      heading)/CT
E60      21476     BT1  Stress, biological/CT
E61      18440       -->  Stress, plant/CT
                        HNTE Valid heading during volume 116 (1992) to
                           present.
E62       8432         OLD  Plant stress/CT
E63       2516         OLD  Plant stress and adaptation/CT
E64        366         OLD  Stresses (biological)/CT
E65        420         NT1  Hypoxia, plant/CT
E66       4477         RT   Adaptation, plant/CT
E67       2665         RT   Atmosphere (environmental)/CT
E68        885         RT   Chlorosis (plant)/CT
E69       5240         RT   Fatigue, biological/CT
E70      46119         RT   Oxidative stress, biological/CT
********** END **********

=> S STRESS (S) PLANT (S) (FREEZING OR FROST)

L5         929 STRESS (S) PLANT (S) (FREEZING OR FROST)

=> S L5 AND (TOMATO OR L3)

L6          38 L5 AND (TOMATO OR L3)

=> S L6 AND (GENE OR GENETIC OR TRANSGENIC)

L7          32 L6 AND (GENE OR GENETIC OR TRANSGENIC)

=> S L7 NOT L4

L8          32 L7 NOT L4
```

=> D IBIB ABS HITIND 2

L8 ANSWER 2 OF 32 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:379655 CAPLUS
DOCUMENT NUMBER: 146:373751
TITLE: Protein kinase stress-related proteins and nucleic acids from Physcomitrella patens and their use for improved growth and stress tolerance in **transgenic** plants
INVENTOR(S): Allen, Damian; Chen, Ruoying; Shirley, Amber
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 126pp., Cont.-in-part of U.S. Ser. No. 768,863.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2007079400	A1	20070405	US 2006-279646	20060413
US 2002059662	A1	20020516	US 2001-828313	20010406
US 6867351	B2	20050315		
CA 2405697	A1	20020613	CA 2001-2405697	20010406
AU 200243190	A	20020618	AU 2002-43190	20010406
EP 1335986	A2	20030820	EP 2001-989068	20010406
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
EP 1728870	A2	20061206	EP 2006-14137	20010406
EP 1728870	A3	20070110		
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR				
EP 1760145	A2	20070307	EP 2006-23947	20010406
EP 1760145	A3	20070502		
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR				
EP 1760146	A2	20070307	EP 2006-23948	20010406
EP 1760146	A3	20070502		
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR				
EP 1783229	A2	20070509	EP 2007-603	20010406
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR, AL, LT, LV, MK, RO, SI				
EP 1795600	A2	20070613	EP 2007-604	20010406
EP 1795600	A3	20070620		
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR				
US 2004194163	A1	20040930	US 2003-688481	20031017
US 2004107463	A1	20040603	US 2003-716089	20031118
US 7161063	B2	20070109		
US 2004148658	A1	20040729	US 2004-764259	20040123
US 2004128721	A1	20040701	US 2004-768511	20040130
US 7189893	B2	20070313		
US 2004199946	A1	20041007	US 2004-768863	20040130
US 7179962	B2	20070220		

(Continued on next page)

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     US 2004216183        A1    20041028    US 2004-770225      20040202
     US 7166767           B2    20070123
PRIORITY APPLN. INFO.:                      US 2000-196001P  P  20000407
                                            US 2001-828313   A3 20010406
                                            US 2004-768863   A2 20040130
                                            EP 2001-923229   A3 20010406
                                            EP 2001-926730   A3 20010406
                                            EP 2001-928388   A3 20010406
                                            EP 2001-928389   A3 20010406
                                            EP 2001-928400   A3 20010406
                                            US 2001-828062   A3 20010406
                                            US 2001-828302   A3 20010406
                                            US 2001-828303   A3 20010406
                                            US 2001-828310   A3 20010406
                                            US 2001-828447   A3 20010406
                                            WO 2001-US11253  W  20010406
AB   A transgenic plant transformed by a protein kinase stress-related
     protein (PKSRP) coding nucleic acid is provided, wherein expression
     of the nucleic acid sequence in the plant results in the plants's
     increased growth under normal or stress conditions and/or increased
     tolerance to environmental stress as compared to a wild-type variety
     of the plant. Also provided are agricultural products, including
     seeds, produced by the transgenic plants.  The PKSRPs comprise
     serine/threonine kinases (PK-6, PK-7, PK-8, and PK-9), calcium-
     dependent protein kinases (CDPK-1 and CDPK-2), casein kinase
     homologs (CK-1, CK-2, CK-3, and CK2-1), and mitogen-activated
     protein kinases (MPK-2, MPK-3, MPK-4, and MPK-5), all from
     Physcomitrella patens.  Transgenic expression of these PKSRPs in
     Beta vulgaris, Nicotiana tabacum, Arabidopsis thaliana, Triticum
     aestivum, Oryza sativa, and Zea mays results in increased growth and
     tolerance to drought/water deficit.
INCL 800287000; 800289000; 435419000; 435468000; 536023600
CC   3-3 (Biochemical Genetics)
     Section cross-reference(s): 7, 11
ST   protein kinase cDNA sequence Physcomitrella stress tolerance; plant
     transgenic protein kinase stress tolerance Physcomitrella
IT   Proteins
     RL: AGR (Agricultural use); BSU (Biological study, unclassified);
         PRP
     (Properties); BIOL (Biological study); USES (Uses)
        (PKSRP (protein kinase stress-related proteins); protein kinase
        stress-related proteins and nucleic acids from Physcomitrella
        patens and their use for improved growth and stress tolerance in
        transgenic plants)
IT   Stress, plant
        (freezing; protein kinase stress-related proteins
        and nucleic acids from Physcomitrella patens and their use for
        improved growth and stress tolerance in transgenic plants)
IT   Poaceae
        (perennial, transgenic; protein kinase stress-related
        proteins and nucleic acids from Physcomitrella patens and their
        use for improved growth and stress tolerance in transgenic
        plants)
```

(Continued on next page)

IT Drought
Freezing
Growth and development, plant
Molecular cloning
Physcomitrella patens
Protein sequences
Stress, plant
cDNA sequences
(protein kinase **stress**-related proteins and nucleic acids from Physcomitrella patens and their use for improved growth and **stress** tolerance in **transgenic plants**)
IT Promoter (**genetic** element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES
(Uses)
(tissue-specific or developmentally-regulated; protein kinase stress-related proteins and nucleic acids from Physcomitrella patens
and their use for improved growth and stress tolerance in **transgenic** plants)
IT Arabidopsis thaliana
Arachis hypogaea
Avena sativa
Beet
⋮
Secale cereale
Seed
Solanaceae
Solanum melongena
Solanum tuberosum
Soybean
Tagetes
Theobroma cacao
Tomato
Triticosecale
Triticum aestivum
Vicia
Zea mays
(**transgenic**; protein kinase stress-related proteins and nucleic acids from Physcomitrella patens and their use for improved
growth and stress tolerance in **transgenic** plants)
IT Stress, plant
(water deficiency; protein kinase stress-related proteins and nucleic acids from Physcomitrella patens and their use for improved growth and stress tolerance in **transgenic** plants)
⋮

Search Question 1E: In CAplus, perform keyword searches on the following question. Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness. Display the bibliographic information and abstract from three records from each search.

- What kinds of materials have been used to adulterate saffron?

```
=> FILE CAPLUS

=> SET ABB ON PERM

SET COMMAND COMPLETED

=> SET PLURALS ON PERM

SET COMMAND COMPLETED

=> E SAFFRON

E1          10     SAFFROL/BI
E2           8     SAFFROLE/BI
E3        1076 --> SAFFRON/BI
E4           1     SAFFRONED/BI
E5           1     SAFFRONIC/BI
E6           1     SAFFRONIN/BI
E7           1     SAFFRONINE/BI
E8           1     SAFFRONLIKE/BI
E9           1     SAFFRONOL/BI
E10          8     SAFFRONS/BI
E11          1     SAFFROTIN/BI
E12          1     SAFFROXAN/BI

=> S E3

          1076 SAFFRON/BI
             8 SAFFRONS/BI
L1        1078 SAFFRON/BI
                ((SAFFRON OR SAFFRONS)/BI)

=> S L1 AND ADULTERAT?

          7011 ADULTERAT?
L2          64 L1 AND ADULTERAT?
```

```
=> D SCAN

L2    64 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   17 (Pharmaceutical Chemistry)
TI   Adulteration of drugs and their microscopic study in filtered
     ultra-violet light
IT   Pharmaceutical preparations
        (adulteration of, and their study in ultraviolet light)
IT   UV radiation
        (in drug examination)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L2    64 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   12 (Foods)
TI   Adulteration of saffron
IT   Saffron
        (adulteration)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L2    64 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   17-6 (Food and Feed Chemistry)
TI   Composition of crocins and picrocrocin from Spanish saffron (Crocus
     sativus L.)
ST   crocin picrocrocin Spanish saffron Crocus HPLCDAD
IT   Crocus sativus
        (crocins and picrocrocin from Spanish saffron, composition
        determined by HPLC-DAD)
IT   138-55-6   39465-00-4, Crocin   42553-65-1, Crocin 4   55750-84-0,
       Crocin 3   90332-59-5, Crocin 1   91740-80-6, 13-cis-Crocin 4
       164454-41-5, 13-cis-Crocin 3
     RL: ANT (Analyte); PRP (Properties); ANST (Analytical study)
        (crocins and picrocrocin from Spanish saffron, composition
        determined by HPLC-DAD)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L2    64 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   12 (Foods)
TI   Saffron Containing Formaldehyde
IT   Food
        (analysis, for colors)
IT   Saffron
        (formaldehyde-containing)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0
```

```
=> S (SAFFRON OR SAFRON) (L) (ADULTERAT? OR AUTHENTIC? OR GENUIN? OR
        FALSIF?)

          1076 SAFFRON
             8 SAFFRONS
          1078 SAFFRON
                 (SAFFRON OR SAFFRONS)
            22 SAFRON
          7011 ADULTERAT?
         24843 AUTHENTIC?
          8196 GENUIN?
          1069 FALSIF?
L3          78 (SAFFRON OR SAFRON) (L) (ADULTERAT? OR AUTHENTIC? OR
               GENUIN? OR FALSIF?)

=> FOCUS L3

PROCESSING COMPLETED FOR L3
L4           78 FOCUS L3 1-

=> D L4 IBIB ABS 1-3

L4   ANSWER 1 OF 78  CAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:        1906:105108  CAPLUS
DOCUMENT NUMBER:         0:105108
TITLE:                   Adulteration of saffron; "Saffron Essence"
AUTHOR(S):               Fresenius, Wilhelm; Gruenhut, Leo
SOURCE:                  Zeitschrift fuer Untersuchung der Nahrungs- und
                         Genussmittel sowie der Gebrauchsgegenstaende
                         (1900), 3, 810-9
                         From: J. Chem. Soc.,  Abstr. 80, II, 211 1901
                         CODEN: ZNGEA2
DOCUMENT TYPE:           Journal
LANGUAGE:                Unavailable
AB    A report on the adulteration of two samples of saffron, and of a
      liquid which had apparently been used for adulterating the second
      sample.  In analyses of this kind, it is not sufficient to merely
      estimate the moisture and the ash and call the balance dry saffron,
      but a complete analysis of the mineral matter should be made by
      operating on the sample itself and not on the ash.  The result of
      the analysis of the first sample was as follows: Crystallised
      magnesium sulphate, 2.5; crystallised borax (10 aqueous), 8.23;
      crystallised normal sodium borate (8 aqueous), 17.49; and saffron,
      48.78 per cent.; total mineral adulterants, 51.32 per cent. The
      second sample showed: potassium nitrate, 12.94; crystallised normal
      potassium borate, 20.86; crystallised normal sodium borate, 6.41;
      sodium hydroxide, 3.21; saffron, 56.58 per cent.; total mineral
      adulterants 43.42 per cent.  In this calculation, it was assumed
      that in the presence of much free alkali normal sodium borate
      crystallises with four instead of eight and neutral potassium borate
      with three instead of four H2O.  It will be readily seen that, owing
      to these salts retaining part of the water at 100°, and to absorption
      of carbon dioxide during the drying, an estimation of moisture in
      the ordinary way would have given erroneous results.  The ash would
      also not have represented the true mineral matter.  The result of
      the analysis of the so-called "Saffron Essence", of which full
```

Use alternative terms and truncation to represent the "saffron" and "adulterate" concepts. (L) proximity operator is used for a more precise search.

(Continued on next page)

analytical details are given, was as follows: water, 46.57; crystallised borax, 16.87; potassium hydroxide, 8.94; potassium nitrate, 10.03; **saffron** (extract), 0.40; sucrose, 9.91; dextrose, 1.65; and dextrin (by difference), 5.63 per cent. The authors are not aware for what purpose it is intended to be used.

L4 ANSWER 2 OF 78 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1944:32195 CAPLUS
DOCUMENT NUMBER: 38:32195
ORIGINAL REFERENCE NO.: 38:4756f-g
TITLE: **Falsifications** and **adulterations** of **saffron** from La Mancha
AUTHOR(S): Torija, Lucio Sahagun
SOURCE: Mon. farm. (1944), 50, 21-2
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Only the stigmas of the crocus flowers should be present, but other parts of the plant may be found in quantities larger than 10%. The weight may be increased unduly by moisture (storage in damp places) and intentionally by adding honey, glycerol, or oil. Other admixts. are: $CaSO_4$, $CaCO_3$, petals of Papaver or Carthamus, the outer skins of onions, cut to suitable size and dyed with eosin. Occasionally saffron is treated with urine to give it more color.

L4 ANSWER 3 OF 78 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1970:88941 CAPLUS
DOCUMENT NUMBER: 72:88941
TITLE: Detection of **adulteration** in **saffron**
AUTHOR(S): Qureshi, Tehseen; Ehsan, Ali
CORPORATE SOURCE: West Reg. Lab., P.C.S.I.R., Lahore, Pak.
SOURCE: Science and Industry (Karachi) (1967), 5(4), 581-4
CODEN: SINDBP; ISSN: 0036-8199
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. The purity of saffron should be evaluated by the glucoside and photometric tests, which must be combined with microscopic, morphol., and organoleptic tests, as well as with moisture and ash anal. to give a true indication of quality. 7 refs.

Search Question 1F: In CAplus, perform keyword searches on the following question. Use D SCAN to evaluate some answers and determine some additional terms that could be added to the search strategies to improve their comprehensiveness. Display the bibliographic information and abstract from three records from each search.

- A recent law requires mattresses to resist an open flame for at least 30 minutes before igniting in order to reduce the number of deaths from house fires. Locate patents on this technology issued after 2006. Brainstorm synonyms for your search terms to be as comprehensive as possible.

```
=> FILE CAPLUS

=> E MATTRESS

E1            1     MATTRAW/BI
E2            1     MATTRE/BI
E3          838 --> MATTRESS/BI
E4          724     MATTRESSES/BI
E5            1     MATTRESSFEATHER/BI
E6            1     MATTRESSS/BI
E7            1     MATTRIAL/BI
E8            3     MATTRIAU/BI
E9            1     MATTRIAUX/BI
E10           1     MATTRICES/BI
E11           1     MATTRIEL/BI
E12           1     MATTRIN/BI

=> S E3-E4

            838 MATTRESS/BI
            724 MATTRESSES/BI
           1185 MATTRESS/BI
                  ((MATTRESS OR MATTRESSES)/BI)
            724 MATTRESSES/BI
L1         1185 (MATTRESS/BI OR MATTRESSES/BI)

=> S (FLAME? OR FIRE?) (2A) (RETARD? OR RESIST?)

         149349 FLAME?
         197087 FIRE?
         157410 RETARD?
        1646707 RESIST?
L2        67814 (FLAME? OR FIRE?) (2A) (RETARD? OR RESIST?)

=> L1 AND L2

L3          175 L1 AND L2
```

```
=> D SCAN

L3    175 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   40-10 (Textiles and Fibers)
TI   Flame-retarding mattresses comprising an inner structure covered
     with a knit fabric comprising fibers from halogen-containing
     fibers, cellulose fibers, flame-retarding cellulose fibers and
     polyester fibers
ST   acrylic fiber cotton blend mattress covering fire retardant; rayon
     acrylic fiber blend mattress covering fire retardant; polyester
     acrylic fiber blend mattress covering fire retardant
IT   Acrylic fibers, uses
     Synthetic polymeric fibers, uses
     RL: PEP (Physical, engineering or chemical process); PRP
     (Properties); PYP (Physical process); TEM (Technical or engineered
     material use); PROC (Process); USES (Uses)
        (acrylonitrile-sodium styrenesulfonate-vinylidene chloride,
        blends with cotton or rayon; flame-retarding mattresses
        comprising an inner structure covered with a knit fabric
        comprising fibers from halogen-containing fibers, cellulose
        fibers, flame-retarding cellulose fibers and polyester fibers)
IT   Polyphosphoric acids
     RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
        (ammonium salts, FCP 730, flame retardant;
        flame-retarding mattresses comprising an inner structure
        covered with a knit fabric comprising fibers from halogen-
          containing fibers, cellulose fibers, flame-retarding cellulose
                    .
                    .
                    .

IT   Fire-resistant materials
     Nonwoven fabrics
        (flame-retarding mattresses comprising an inner structure
        covered with a knit fabric comprising fibers from halogen-
        containing fibers, cellulose fibers, flame-retarding cellulose
        fibers and polyester fibers)
                    .
                    .
                    .

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L3    175 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
IC   ICM  A47C027-00
     ICS  D04H013-00; B32B005-26
CC   40-10 (Textiles and Fibers)
TI   Layered high loft flame resistant batting, articles containing said
     batting, and processes for making same
ST   mattress heat resistant batting; batting cellulose polyester
     modacrylic fiber flame resistant
IT   Acrylic fibers, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (Protex C; layered high loft flame resistant
        batting, articles containing said batting, and processes for
        making same)
```

(Continued on next page)

```
IT   Polyamide fibers, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
       (aramid; layered high loft flame resistant batting,
        articles containing said batting, and processes for making same)
IT   Fibers
     RL: TEM (Technical or engineered material use); USES (Uses)
        (cellulosic; layered high loft flame resistant
        batting, articles containing said batting, and processes for
        making same)
IT   Polybenzimidazoles
     RL: TEM (Technical or engineered material use); USES (Uses)
        (fiber; layered high loft flame resistant batting,
        articles containing said batting, and processes for making same)
IT   Binders
       Fire-resistant materials
        (layered high loft flame resistant batting,
        articles containing said batting, and processes for making same)
IT   Polyester fibers, uses
     Polyimide fibers
     Rayon, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (layered high loft flame resistant batting,
        articles containing said batting, and processes for making same)
IT   Household furnishings
        (mattresses; layered high loft flame
         resistant batting, articles containing said batting, and
                       :
                       :
                       :

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> S BEDDING OR L1

          4588 BEDDING
           226 BEDDINGS
          4639 BEDDING
                 (BEDDING OR BEDDINGS)
L4        5682 BEDDING OR L1

=> S L4 AND L2

L5         264 L4 AND L2

=> S L5 AND PATENT/DT

       5773876 PATENT/DT
L6         200 L5 AND PATENT/DT

=> S L6 AND PY>2006

        699249 PY>2006
L7          32 L6 AND PY>2006
```

=> D SCAN

L7 32 ANSWERS CAPLUS COPYRIGHT 2008 ACS on STN
IC ICM D03D015-00
    ICS D04H001-00; D04H005-00; D04H003-10; D04H013-00; D04H005-02
INCL 442408000; 442327000; 442381000
CC 40-10 (Textiles and Fibers)
TI Structurally stable **flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers
ST lyocell rayon modacrylic fiber blend nonwoven **bedding flame resistant**; aramid fiber lyocell rayon modacrylic fiber blend **bedding flameproof**
IT Acrylic fibers, uses
    RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
    (PBX; **flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers)
IT Polyamide fibers, uses
    RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
    (aramid, Twaron; **flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers)
IT Household furnishings
    (**bedding; flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers)
IT **Fire-resistant materials**
    Heat-resistant materials
    Nonwoven fabrics
    (**flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers)
IT Household furnishings
    (**mattresses, mattress** pads; **flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers)
IT Cushions
    (pillows, pillow covers; **flame retardant bedding** articles comprising hydroentangled nonwovens comprising a layer comprising lyocell fibers and modacrylic fibers, and a layer comprising lyocell fibers, modacrylic fibers and para-aramid fibers)

(Continued on next page)

```
IT   Rayon, uses
     RL: PEP (Physical, engineering or chemical process); PRP
       (Properties); PYP (Physical process); TEM (Technical or engineered
       material use); PROC (Process); USES (Uses)
        (reconstituted, Tencel; flame retardant
        bedding articles comprising hydroentangled nonwovens comprising
        a layer comprising lyocell fibers and modacrylic fibers, and a
        layer comprising lyocell fibers, modacrylic fibers and para-
        aramid fibers)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> FOCUS L7

PROCESSING COMPLETED FOR L7
L8           32 FOCUS L7 1-

=> D 1-3

L8   ANSWER 1 OF 32  CAPLUS  COPYRIGHT 2008 ACS on STN
AN   2006:605221  CAPLUS  Full-text
DN   145:64424
TI   Fire retardant cover for mattresses, flame resistant mattress,
     and mattress-cover set
IN   Murphy, Harrison R.; Slavik, Juraj Michal Daniel; Sytz, Ronald
PA   USA
SO   U.S. Pat. Appl. Publ., 15 pp., Cont.-in-part of U.S. Ser. No.
     208,966.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.   DATE
     ---------------     ----   --------    ---------------   --------
PI   US 2006135014        A1    20060622    US 2005-258752    20051026
     WO 2007024871        A2    20070301    WO 2006-US32800   20060822 <-
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
             GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG,
             KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA,
             MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG,
             PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY,
             TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
             IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
             TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
             ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
PRAI GB 2004-26076        A     20041126
     US 2005-208966       A2    20050822
     US 2005-258752       A     20051026

L8   ANSWER 2 OF 32  CAPLUS  COPYRIGHT 2008 ACS on STN
AN   2007:63212  CAPLUS  Full-text
DN   146:123504
```

(Continued on next page)

TI **Fire-retardant** binding tapes for **mattresses** for affixing the butt splice joints between rolls of a **fire-retardant** material and construction of **mattresses** using the binding tapes there from
IN Emanuel, Brian K.; Garris, Terry L.
PA Western Nonwovens, Inc., USA
SO U.S. Pat. Appl. Publ., 7pp.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2007014960	A1	20070118	US 2005-183583	20050718 <-
PRAI US 2005-183583		20050718		

L8 ANSWER 3 OF 32 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:367121 CAPLUS Full-text
DN 144:392721
TI **Flame-retardant** synthetic fibers, **flame-retardant** fiber composites, and upholstered furniture products made with them
IN Ebisu, Toshiaki; Tamura, Masanobu; Mihoichi, Masahiko; Mio, Wataru; Matsumoto, Yoshitomo; Maruyama, Shigeru
PA Kaneka Corporation, Japan
SO PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2006040873	A1	20060420	WO 2005-JP14692	20050810
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 1798318	A1	20070620	EP 2005-770521	20050810 <-
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR				
PRAI JP 2004-296443	A	20041008		
JP 2004-299406	A	20041013		
WO 2005-JP14692	W	20050810		

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

Search Question 2: How many patents about hydrogen fuel cells does Takahiro Kuriiwa have?

- Remember to review the article indexing to obtain additional search terms
- Compare the results of at least two databases that contain patents (CAplus and USPATFULL should be included)
- Display three patent titles from each database

```
=> FILE CAPLUS

=> E KURIIWA T/AU

E1           2     KURIIWA KAZUKO/AU
E2           7     KURIIWA NOBUO/AU
E3           6 --> KURIIWA T/AU
E4          65     KURIIWA TAKAHIRO/AU
E5           2     KURIIWA YOSHIAKI/AU
E6           1     KURIIYAMA TAKASHI/AU
E7           1     KURIJ ALEKSANDR S/AU
E8           1     KURIJAMA KAZUO/AU
E9           1     KURIJAMA YU/AU
E10          1     KURIK A Y/AU
E11          2     KURIK L/AU
E12          4     KURIK M/AU

=> S E3-E4

             6 "KURIIWA T"/AU
            65 "KURIIWA TAKAHIRO"/AU
L1          71 ("KURIIWA T"/AU OR "KURIIWA TAKAHIRO"/AU)

=> S (HYDROGEN FUEL CELL?)

       1000962 HYDROGEN
          6005 HYDROGENS
       1004311 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
        407719 FUEL
        168641 FUELS
        460553 FUEL
                 (FUEL OR FUELS)
       3482386 CELL?
L2        1402 (HYDROGEN FUEL CELL?)
                 (HYDROGEN(W)FUEL(W)CELL?)

=> S L1 AND L2

L3           1 L1 AND L2
```

```
=> D SCAN

L3    1 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
IC   ICM  H01M008-04
     ICS  H01M008-04; H01M008-10
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
TI   Purge device for hydrogen fuel cell
ST   hydrogen fuel cell purge device
IT   Air
     Fuel cells
        (purge device for hydrogen fuel cell)
IT   1333-74-0, Hydrogen, processes
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); REM (Removal or disposal); PROC (Process)
        (purge device for hydrogen fuel cell)

ALL ANSWERS HAVE BEEN SCANNED

=> INDEX CAPLUS USPATFULL LWPI EPFULL

INDEX 'CAPLUS, USPATFULL, LWPI, EPFULL' ENTERED ON 29 JUL 2008
4 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> SET DETAIL ON

SET COMMAND COMPLETED

=> S (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

FILE 'CAPLUS'
        407719 FUEL
        168641 FUELS
        460553 FUEL
                 (FUEL OR FUELS)
       3482386 CELL?
         74713 FUEL CELL?
                 (FUEL(W)CELL?)
       1000962 HYDROGEN
          6005 HYDROGENS
       1004311 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
            71 KURIIWA T?/AU
            40 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

FILE 'USPATFULL'
        254234 FUEL
         51966 FUELS
        263886 FUEL
                 (FUEL OR FUELS)
       1076015 CELL?
         25969 FUEL CELL?
                 (FUEL(W)CELL?)
```

Use the INDEX command to search multiple databases at one time.

(Continued on next page)

```
        588049 HYDROGEN
         18526 HYDROGENS
        589817 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
            23 KURIIWA T?/AU
            14 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

FILE 'LWPI'
          2950 FUEL
           156 FUELS
          2996 FUEL
                 (FUEL OR FUELS)
          7273 CELL?
           399 FUEL CELL?
                 (FUEL(W)CELL?)
          2184 HYDROGEN
            26 HYDROGENS
          2201 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
             0 KURIIWA T?/AU
             0 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

FILE 'EPFULL'
         65773 FUEL
          9673 FUELS
         68191 FUEL
                 (FUEL OR FUELS)
        449666 CELL?
          8858 FUEL CELL?
                 (FUEL(W)CELL?)
        165549 HYDROGEN
          4028 HYDROGENS
        165971 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
             7 KURIIWA T?/AU
             3 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

L4   QUE (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

=> FIL HITS

FILE 'CAPLUS' ENTERED AT 08:41:53 ON 29 JUL 2008

FILE 'USPATFULL' ENTERED AT 08:41:53 ON 29 JUL 2008

FILE 'EPFULL' ENTERED AT 08:41:53 ON 29 JUL 2008

=> SET MSTEPS ON

SET COMMAND COMPLETED
```

```
=> S L4

FILE 'CAPLUS'
        407719 FUEL
        168641 FUELS
        460553 FUEL
                 (FUEL OR FUELS)
       3482386 CELL?
         74713 FUEL CELL?
                 (FUEL(W)CELL?)
       1000962 HYDROGEN
          6005 HYDROGENS
       1004311 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
            71 KURIIWA T?/AU
L5          40 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

FILE 'USPATFULL'
        254234 FUEL
         51966 FUELS
        263886 FUEL
                 (FUEL OR FUELS)
       1076015 CELL?
         25969 FUEL CELL?
                 (FUEL(W)CELL?)
        588049 HYDROGEN
         18526 HYDROGENS
        589817 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
            23 KURIIWA T?/AU
L6          14 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

FILE 'EPFULL'
         65773 FUEL
          9673 FUELS
         68191 FUEL
                 (FUEL OR FUELS)
        449666 CELL?
          8858 FUEL CELL?
                 (FUEL(W)CELL?)
        165549 HYDROGEN
          4028 HYDROGENS
        165971 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
             7 KURIIWA T?/AU
L7           3 (FUEL CELL?) AND HYDROGEN AND (KURIIWA T?/AU)

TOTAL FOR ALL FILES
L8          57 L4

=> S L5 AND PATENT/DT

FILE 'CAPLUS'
       5773876 PATENT/DT
L9          39 L5 AND PATENT/DT
```

Limit the answer set to patents only.

(Continued on next page)

```
FILE 'USPATFULL'
        254234 FUEL
         51966 FUELS
        263886 FUEL
                 (FUEL OR FUELS)
       1076015 CELL?
         25969 FUEL CELL?
                 (FUEL(W)CELL?)
        588049 HYDROGEN
         18526 HYDROGENS
        589817 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
            23 KURIIWA T?/AU
       4851478 PATENT/DT
L10         14 L5 AND PATENT/DT

FILE 'EPFULL'
         65773 FUEL
          9673 FUELS
         68191 FUEL
                 (FUEL OR FUELS)
        449666 CELL?
          8858 FUEL CELL?
                 (FUEL(W)CELL?)
        165549 HYDROGEN
          4028 HYDROGENS
        165971 HYDROGEN
                 (HYDROGEN OR HYDROGENS)
             7 KURIIWA T?/AU
       2240487 PATENT/DT
L11          3 L5 AND PATENT/DT

TOTAL FOR ALL FILES
L12         56 L5 AND PATENT/DT

=> SET DUPORDER FILE

SET COMMAND COMPLETED

=> DUP REM L9 L10 L11

PROCESSING COMPLETED FOR L9
PROCESSING COMPLETED FOR L10
PROCESSING COMPLETED FOR L11
L13          50 DUP REM L9 L10 L11 (6 DUPLICATES REMOVED)
                ANSWERS '1-39' FROM FILE CAPLUS
                ANSWERS '40-47' FROM FILE USPATFULL
                ANSWERS '48-50' FROM FILE EPFULL

=> D TI HIT 1

L13  ANSWER 1 OF 50  CAPLUS  COPYRIGHT 2008 ACS on STN DUPLICATE 1
TI   Fuel cell system for warming up using a hydrogen storage alloy
TI   Fuel cell system for warming up using a hydrogen storage alloy
IN   Kuriiwa, Takahiro; Takenawa, Ryoji; Kuwabara, Hirokazu
```

DUPLICATE REMOVE removes duplicate answers from the selected databases.

(Continued on next page)

DT **Patent**
AB A **fuel cell** system is disclosed having a **fuel cell** consuming the **hydrogen** stored in the high-pressure **hydrogen** tank as fuel gas, a **hydrogen** supply line connecting the high-pressure **hydrogen** tank to the **fuel cell**, a primary decompressing means provided on the **hydrogen** supply line, a secondary decompressing means provided in the downstream side of the primary decompressing means on the **hydrogen** supply line, a **hydrogen** storage alloy tank saving a **hydrogen** storage alloy and thermal-exchangeably connected to the **fuel cell**, a **hydrogen** pipe connected between the primary decompressing means and the secondary decompressing means, and supplied for **hydrogen** transfer between the **hydrogen** supply line and the **hydrogen** storage alloy tank is provided, and a controlling means for introducing the **hydrogen** of the first prescribed pressure into the **hydrogen** storage alloy tank from the **hydrogen** supply line through the **hydrogen** pipe during the warm-up of the **fuel cell**.
ST **fuel cell** system warming up hydrogen storage alloy use
IT Control apparatus
Fuel cells
Heat transfer
Vehicles
(fuel cell system for warming up using **hydrogen** storage alloy)
IT Alloys, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogen storage; fuel cell system for warming up using **hydrogen** storage alloy)
IT 1333-74-0, **Hydrogen**, uses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**fuel cell** system for warming up using **hydrogen** storage alloy)

=> D TI 1-3 FROM EACH

L13 ANSWER 1 OF 50 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 1
TI **Fuel cell** system for warming up using a **hydrogen** storage alloy

L13 ANSWER 2 OF 50 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 2
TI **Fuel cell hydrogen** recovery system

L13 ANSWER 3 OF 50 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 3
TI **Hydrogen** supplying apparatus for **fuel cell**

L13 ANSWER 40 OF 50 USPATFULL on STN
TI Apparatus and method for heat exchange of liquid fuel type **fuel cell** system

L13 ANSWER 41 OF 50 USPATFULL on STN
TI Control device for **fuel cell** system and related method

L13 ANSWER 42 OF 50 USPATFULL on STN
TI Method of absorption-desorption of **hydrogen** storage alloy and **hydrogen** storage alloy and **fuel cell** using said method

(Continued on next page)

L13 ANSWER 48 OF 50 EPFULL COPYRIGHT 2008 EPO/FIZ KA on STN
TIEN Control device for **fuel cell** system and related method.
TIFR dispositif de controle et procede connexe pour systeme de pile a combustible.
TIDE Regelvorrichtung und entsprechendes Steuerverfahren fuer Brennstoffzellensystem.

L13 ANSWER 49 OF 50 EPFULL COPYRIGHT 2008 EPO/FIZ KA on STN
TIEN METHOD OF ABSORPTION-DESORPTION OF **HYDROGEN** STORAGE ALLOY AND **HYDROGEN** STORAGE ALLOY AND **FUEL CELL** USING SAID METHOD.
TIFR PROCEDE D'ABSORPTION/DESORPTION POUR ALLIAGE DE STOCKAGE D'HYDROGENE, ALLIAGE DE STOCKAGE D'HYDROGENE ET PILE A COMBUSTIBLE FAISANT APPEL A CE PROCEDE.
TIDE VERFAHREN ZUR ABSORPTION UND DESORBTION VON WASSERSTOFFSPEICHERLEGIERUNGEN UND WASSERSTOFFSPEICHERLEGIERUNG UND BRENNSTOFFZELLE DIESES VERFAHREN VERWENDEND.

L13 ANSWER 50 OF 50 EPFULL COPYRIGHT 2008 EPO/FIZ KA on STN
TIEN ALLOY FOR **HYDROGEN** STORAGE, METHOD FOR ABSORPTION AND RELEASE OF **HYDROGEN** USING THE ALLOY, AND **HYDROGEN FUEL CELL** USING THE METHOD.
TIFR ALLIAGE DE STOCKAGE D'HYDROGENE, PROCEDE D'ABSORPTION, LIBERATION D'HYDROGENE UTILISANT L'ALLIAGE ET PILE A COMBUSTIBLE A HYDROGENE METTANT EN OEUVRE CE PROCEDE.
TIDE LEGIERUNG ZUM WASSERSTOFFSPEICHERN, VERFAHREN ZUM ABSORBIEREN UND FREISETZEN VON WASSERSTOFF DURCH DEN GEBRAUCH DER LEGIERUNG UND WASSERSTOFFBRENNSTOFFZELLE ZUR ANWENDUNG DES VERFAHRENS.

Search Question 3: Find information in the MEDLINE database on job stress in the dental profession.

- Use various proximity operators to adjust the size and focus of your answer set
- Use the appropriate no cost display format to evaluate and improve your answer set
- Relevance rank the final answer set and display the titles of the 5 most relevant answers

```
=> FILE MEDLINE

=> S DENTAL OR DENTIST?

        291638 DENTAL
             5 DENTALS
        291639 DENTAL
                 (DENTAL OR DENTALS)
         87915 DENTIST?
L1      320684 DENTAL OR DENTIST?

=> S JOB STRESS###

         40367 JOB
          6218 JOBS
         44444 JOB
                 (JOB OR JOBS)
        350439 STRESS###
L2         776 JOB STRESS###
                 (JOB(W)STRESS###)

=> S L1 AND L2

L3          14 L1 AND L2

=> D TRIAL 1-6

L3   ANSWER 1 OF 14     MEDLINE on STN
TI   Relationship between stress factor and periodontal disease in a
     rural area population in Japan.
CT   Check Tags: Female; Male
      Adolescent
                      :
                      :
                      :
     *Rural Health
     *Rural Population: SN, statistics & numerical data
     *Stress, Psychological: CO, complications
      Stress, Psychological: EP, epidemiology
```

Implied proximity operator.

D TRIAL is the free display format in MEDLINE.

(Continued on next page)

```
L3   ANSWER 2 OF 14     MEDLINE on STN
TI   Perceptions of a dental career among successful applicants for
     dentistry compared with those of fifth-year dental students.
CT   *Attitude
     *Career Choice
      Career Mobility
      Chi-Square Distribution
      Cohort Studies
      Communication
      Confidence Intervals
      Economics, Dental
      Education, Dental
                     .
                     .
                     .
      Occupational Diseases: ET, etiology
      Problem Solving
      Professional Autonomy
      Questionnaires
      Stress, Psychological: ET, etiology
      Students, Dental: CL, classification
     *Students, Dental: PX, psychology
      Technology, Dental: ED, education

L3   ANSWER 3 OF 14     MEDLINE on STN
TI   [Job stress and health in dentists].
     Werkdruk en gezondheid bij tandartsen.
CT   Check Tags: Female; Male
      Adult
     *Dentists: PX, psychology
     *Dentists: SN, statistics & numerical data
                     .
                     .
                     .
     *Stress, Psychological: EP, epidemiology
     *Stress, Psychological: ET, etiology
     *Workload: PX, psychology

L3   ANSWER 4 OF 14     MEDLINE on STN
TI   Dentists' perceived stress and its relation to perceptions about
     anxious patients.
CT   Check Tags: Female; Male
                     .
                     .
                     .
      Dental Anxiety: PC, prevention & control
     *Dental Anxiety: PX, psychology
      Dental Care: AE, adverse effects
      Dentist-Patient Relations
     *Dentists
                     .
                     .
                     .
```

(Continued on next page)

```
      Practice Management, Dental
      Private Practice
                     :
                     :
     *Stress, Psychological: PX, psychology
      Workload

L3   ANSWER 5 OF 14     MEDLINE on STN
TI   Perceived sources of occupational stress in general dental
     practitioners.
CT   Check Tags: Female; Male
      Adaptation, Psychological
      Analysis of Variance
      Appointments and Schedules
      Community Dentistry
      Dental Staff
      Dentist-Patient Relations
      England
     *General Practice, Dental
      Humans
      Income
      Job Satisfaction
     *Occupational Diseases: ET, etiology
      Personnel Management
      Practice Management, Dental: EC, economics
      Practice Management, Dental: OG, organization & administration
      Private Practice
      Sex Factors
      State Medicine: OG, organization & administration
     *Stress: ET, etiology
      Time Factors
      Wales

L3   ANSWER 6 OF 14     MEDLINE on STN
TI   Factors related to time management are major job stressors for GDPs.
CT   Check Tags: Female; Male
      Dentist-Patient Relations
      England
     *General Practice, Dental
      Humans
     *Occupational Diseases: ET, etiology
      Practice Management, Dental: EC, economics
      Practice Management, Dental: OG, organization & administration
     *Stress: ET, etiology
      Time Factors
      Wales
```

```
=> S (JOB? OR WORK OR OCCUPATION?) (2A) STRESS###

         45059 JOB?
        333807 WORK
         18023 WORKS
        349542 WORK
                (WORK OR WORKS)
        201401 OCCUPATION?
        350439 STRESS###
L4        3913 (JOB? OR WORK OR OCCUPATION?) (2A) STRESS###

=> S L1 AND L4

L5          96 L1 AND L4

=> FOCUS

PROCESSING COMPLETED FOR L5
L6           96 FOCUS L5 1-

=> D TI 1-5

L6   ANSWER 1 OF 96     MEDLINE on STN
TI   Work stress, job satisfaction and emotional well-being among
     Canadian dental assistants.

L6   ANSWER 2 OF 96     MEDLINE on STN
TI   'It's difficult being a dentist': stress and health in the general
     dental practitioner.

L6   ANSWER 3 OF 96     MEDLINE on STN
TI   Occupational stress and job satisfaction in the community dental
     service of north Wales: a pilot study.

L6   ANSWER 4 OF 96     MEDLINE on STN
TI   Occupational stress and dentistry: theory and practice. Part II.
     Assessment and control.

L6   ANSWER 5 OF 96     MEDLINE on STN
TI   Work stress and burnout among dental hygienists.
```

FOCUS sorts by most relevant answers.

Search Question 4: Choose a company of interest to you and find a recent patent filed by this company.

- Use the CAplus company name thesaurus and the Derwent Patent Assignee Codes (PACOs) in LWPI to identify variations on this company name and or subsidiaries
- Using this information, perform a multifile patent search for this company in CAplus and LWPI

No solution for this is provided as the answers will vary by company, but check your process against the Syngenta example in the workbook.

Search Question 5: Find patents on golf ball covers held by Acushnet.

- HINT: Search in at least three of the following databases: CAplus, LWPI, USPATFULL, or USPAT2 to compare your results

```
=> FILE USPAT2

=> S ACUSHNET/PA

L1          410 ACUSHNET/PA

=> S GOLF BALL COVER?

           4424 GOLF
              9 GOLFS
           4424 GOLF
                  (GOLF OR GOLFS)
          46007 BALL
          15970 BALLS
          50608 BALL
                  (BALL OR BALLS)
         247260 COVER?
L2           573 GOLF BALL COVER?
                  (GOLF(W)BALL(W)COVER?)

=> S (GOLF BALL) (4A) COVER?

           4424 GOLF
              9 GOLFS
           4424 GOLF
                  (GOLF OR GOLFS)
          46007 BALL
          15970 BALLS
          50608 BALL
                  (BALL OR BALLS)
           2329 GOLF BALL
                  (GOLF(W)BALL)
         247260 COVER?
L3           863 (GOLF BALL) (4A) COVER?

=> S L2 OR L3

L4           863 L2 OR L3

=> S L1 AND L4

L5           305 L1 AND L4
```

Try out your search strategy in a low cost database.

Implied proximity.

=> D SCAN

L5 305 ANSWERS USPATFULL
AN 2004:281077 USPAT2
TI Compositions for golf equipment
NCL NCLM: 528/326.000; 528/329.100
  NCLS: 473/371.000; 473/374.000; 473/378.000; 525/424.000;
  525/434.000; 528/085.000; 528/335.000; 473/351.000
PAGE IMAGES NOT AVAILABLE FOR THIS PATENT

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):**0**

=> D HIT 1

L5 ANSWER 1 OF 305 USPAT2 on STN
PA **Acushnet** Company, Fairhaven, MA, UNITED STATES (U.S. corporation)
SUMM Conventional **golf balls** have primarily two functional components: the inner core and the cover. The primary purpose of the inner core is to be the "spring" of the ball or the principal source of resiliency, and the inner core may be either solid or wound. The primary purpose of the cover is to protect the inner core. Multi-layer solid balls include multi-layer inner core constructions, multi-layer cover constructions, or combinations thereof. In a **golf ball** with a multi-layer inner core, the principal source of resiliency is the multi-layer inner core. In a **golf ball** with a multi-layer **cover**, the principal source of resiliency is the single-layer inner core.

DETD To craft a high moment of inertia ball, the inner cover 16 may have high density fillers, such as those described below incorporated therein so long as the cover layer is thin. In other words, the inner cover 16 is a thin inner cover. Preferably, the inner cover is the densest portion of the **golf ball**. The inner **cover** 16 is made preferably from thermoplastic materials as described below. More preferably, the material is a non-ionomeric polymer. Suitable thermoplastic materials for the inner cover include polyethylene, polystyrene, polypropylene, thermoplastic polyesters, acetal, polyamides including semicrystalline polyamide, polycarbonate (PC), shape memory polymers, polyvinyl chloride (PVC), trans-polybutadiene, liquid crystalline polymers, polyether ketone (PEEK), bio(maleimide), and polysulfone resins. Other preferred thermoplastics for forming the inner cover include other Surlyn® from DuPont and, single-site catalyzed polymers including non-metallocene and metallocene, polyurethane, polyurea, or a combination of the foregoing. Suitable polymeric materials also include those listed in U.S. Pat. Nos. 6,187,864, 6,232,400, 6,245,862, 6,290,611 and 6,142,887 and in PCT publication No. WO 01/29129, which are incorporated herein by reference in their entirety. Suitable materials are also disclosed in an U.S. patent application entitled "**Golf Ball** with Vapor Barrier Layer," bearing application Ser. No. 10/077,081, filed on Feb. 15, 2002. The disclosures of this application are incorporated by reference herein in its entirety.
DETD The inner cover layer may also be formed from thermoplastic polymer with low flexural modulus that can be reinforced by fillers. As used herein, the term "fillers" includes any compound

(Continued on next page)

```
       or composition that can be used to vary the density and other
       properties of the subject golf ball inner cover and/or outer
       cover or exterior cover. Fillers useful in the golf ball layer
       according to the present invention include, but are not limited
       to, metal (or metal alloy) powders, metal oxide, metal
       searates, particulate, carbonaceous materials, and the like or
       blends thereof. The amount and type of fillers utilized is
       governed by the amount and weight of other ingredients in the
       composition, since a maximum golf ball weight of 1.620 ounces
       (45.92 gm) has been established by the USGA.
DETD   In another embodiment the inner and outer cover layers are
       disclosed in U.S. Pat. No. 5,885,172, which is incorporated
       herein by reference in its entirety. The outer cover layer 18 is
       preferably formed from a relatively soft thermoset material in
       order to replicate the soft feel and high spin play
       characteristics of a balata ball when the balls of the present
       invention are used for pitch and other "short game" shots. In
       particular, the outer cover layer should have a Shore D hardness
       of from less than about 65 or about 30 to about 60, preferably
       about 35 to about 50 and most preferably about 40 to about 45.
       Hardness is preferably measured pursuant to ASTM D-2240-02a
       (entitled "Standard Test Method for Rubber Property-Durometer
       Hardness") in either button or slab form. Additionally, the
       materials of the outer cover layer should have a degree of
       abrasion resistance in order to be suitable for use as a golf
       ball cover.

=> INDEX USPAT2 CAPLUS LWPI

INDEX 'USPAT2, CAPLUS, LWPI' ENTERED AT 09:21:48 ON 29 JUL 2008

3 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> SET DETAIL ON

SET COMMAND COMPLETED

=> S ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

FILE 'USPAT2'
          4424 GOLF
             9 GOLFS
          4424 GOLF
                 (GOLF OR GOLFS)
         46007 BALL
         15970 BALLS
         50608 BALL
                 (BALL OR BALLS)
          2329 GOLF BALL
                 (GOLF(W)BALL)
        247260 COVER?
           863 (GOLF BALL) (4A) COVER?
           410 ACUSHNET/PA
           305 ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA
```

INDEX conducts a multifile search.

(Continued on next page)

```
FILE 'CAPLUS'
          5768 GOLF
             2 GOLFS
          5769 GOLF
                 (GOLF OR GOLFS)
         70175 BALL
         18535 BALLS
         79238 BALL
                 (BALL OR BALLS)
          2785 GOLF BALL
                 (GOLF(W)BALL)
        470454 COVER?
          1147 (GOLF BALL) (4A) COVER?
           315 ACUSHNET/PA
           136 ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

FILE 'LWPI'
           333 GOLF
          1980 BALL
           531 BALLS
          2135 BALL
                 (BALL OR BALLS)
           102 GOLF BALL
                 (GOLF(W)BALL)
          8661 COVER?
            14 (GOLF BALL) (4A) COVER?
            13 ACUSHNET/PA
             4 ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

L6   QUE ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

=> D RANK

F1         305   USPAT2
F2         136   CAPLUS
F3           4   LWPI

=> SET MSTEPS ON

SET COMMAND COMPLETED

=> FIL HITS

FILE 'USPAT2' ENTERED AT 09:28:23 ON 29 JUL 2008

FILE 'CAPLUS' ENTERED AT 09:28:23 ON 29 JUL 2008

FILE 'LWPI' ENTERED AT 09:28:23 ON 29 JUL 2008

=> S L6

FILE 'USPAT2'
          4424 GOLF
             9 GOLFS
```

(Continued on next page)

```
          4424 GOLF
                 (GOLF OR GOLFS)
         46007 BALL
         15970 BALLS
         50608 BALL
                 (BALL OR BALLS)
          2329 GOLF BALL
                 (GOLF(W)BALL)
        247260 COVER?
           863 (GOLF BALL) (4A) COVER?
           410 ACUSHNET/PA
L7          305 ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

FILE 'CAPLUS'
          5768 GOLF
             2 GOLFS
          5769 GOLF
                 (GOLF OR GOLFS)
         70175 BALL
         18535 BALLS
         79238 BALL
                 (BALL OR BALLS)
          2785 GOLF BALL
                 (GOLF(W)BALL)
        470454 COVER?
          1147 (GOLF BALL) (4A) COVER?
           315 ACUSHNET/PA
L8          136 ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

FILE 'LWPI'
           333 GOLF
          1980 BALL
           531 BALLS
          2135 BALL
                 (BALL OR BALLS)
           102 GOLF BALL
                 (GOLF(W)BALL)
          8661 COVER?
            14 (GOLF BALL) (4A) COVER?
            13 ACUSHNET/PA
L9           4 ((GOLF BALL) (4A) COVER?) AND ACUSHNET/PA

TOTAL FOR ALL FILES
L10         445 L6

=> D TI HIT 1 FROM EACH

L10  ANSWER 1 OF 445  USPAT2 on STN
TI     Golf ball with small inner core
PA     Acushnet Company, Fairhaven, MA, UNITED STATES (U.S. corporation)
SUMM   Conventional golf balls have primarily two functional components:
       the inner core and the cover. The primary purpose of the inner
```

Review one record from each database.

(Continued on next page)

core is to be the "spring" of the ball or the principal source of resiliency, and the inner core may be either solid or wound. The primary purpose of the cover is to protect the inner core. Multi-layer solid balls include multi-layer inner core constructions, multi-layer cover constructions, or combinations thereof. In a **golf ball** with a multi-layer inner core, the principal source of resiliency is the multi-layer inner core. In a **golf ball** with a multi-layer **cover**, the principal source of resiliency is the single-layer inner core.

DETD To craft a high moment of inertia ball, the inner cover 16 may have high density fillers, such as those described below incorporated therein so long as the cover layer is thin. In other words, the inner cover 16 is a thin inner cover. Preferably, the inner cover is the densest portion of the **golf ball**. The inner cover 16 is made preferably from thermoplastic materials as described below. More preferably, the material is a non-ionomeric polymer. Suitable thermoplastic materials for the inner cover include polyethylene, polystyrene, polypropylene, thermoplastic polyesters, acetal, polyamides including semicrystalline polyamide, polycarbonate (PC), shape memory polymers, polyvinyl chloride PVC), trans-polybutadiene, liquid crystalline polymers, polyether ketone (PEEK), bio(maleimide), and polysulfone resins. Other preferred thermoplastics for forming the inner cover include other Surlyn® from DuPont and, single-site catalyzed polymers including non-metallocene and metallocene, polyurethane, polyurea, or a combination of the foregoing. Suitable polymeric materials also include those listed in U.S. Pat. Nos. 6,187,864, 6,232,400, 6,245,862, 6,290,611 and 6,142,887 and in PCT publication No. WO 01/29129, which are incorporated herein by reference in their entirety. Suitable materials are also disclosed in an U.S. patent application entitled "**Golf Ball** with Vapor Barrier Layer," bearing application Ser. No. 10/077,081, filed on Feb. 15, 2002. The disclosures of this application are incorporated by reference herein in its entirety.

DETD The inner cover layer may also be formed from thermoplastic polymer with low flexural modulus that can be reinforced by fillers. As used herein, the term "fillers" includes any compound or composition that can be used to vary the density and other properties of the subject **golf ball** inner **cover** and/or outer cover or exterior **cover**. Fillers useful in the **golf ball** layer according to the present invention include, but are not limited to, metal (or metal alloy) powders, metal oxide, metal searates, particulate, carbonaceous materials, and the like or blends thereof. The amount and type of fillers utilized is governed by the amount and weight of other ingredients in the composition, since a maximum **golf ball** weight of 1.620 ounces (45.92 gm) has been established by the USGA.

DETD In another embodiment the inner and outer cover layers are disclosed in U.S. Pat. No. 5,885,172, which is incorporated herein by reference in its entirety. The outer cover layer 18 is preferably formed from a relatively soft thermoset material in order to replicate the soft feel and high spin play characteristics of a balata ball when the balls of the present

(Continued on next page)

invention are used for pitch and other "short game" shots. In particular, the outer cover layer should have a Shore D hardness of from less than about 65 or about 30 to about 60, preferably about 35 to about 50 and most preferably about 40 to about 45. Hardness is preferably measured pursuant to ASTM D-2240-02a (entitled "Standard Test Method for Rubber Property-Durometer Hardness") in either button or slab form. Additionally, the materials of the outer cover layer should have a degree of abrasion resistance in order to be suitable for use as a **golf ball cover**.

L10 ANSWER 306 OF 445 CAPLUS COPYRIGHT 2008 ACS on STN
TI Multi-modal ionomeric **golf ball** compositions and forming **golf ball** layers
PA **Acushnet** Company, USA
AB Compns. for **golf balls** include multi-modal ionomers that can be used in any layer of a **golf ball**, e.g., an outer **cover** layer or inner cover layer. The compns. can be a blend of a multi-modal ionomer and a conventional ionomer, highly neutralized polymer, acid copolymer, or other suitable thermoplastic polymer. A process is carried out in which mixture of a first acid copolymer having a mol. weight of .gtorsim.70,000, and a second acid copolymer having a mol. weight .ltorsim.40,000, is provided with a neutralizing agent, mixing the first acid copolymer, the second acid copolymer, and the neutralizing agent to form the in-situ multi-modal mixture The multi-modal ionomer is a bimodal distribution of magnesium copolymer and terpolymer ionomer having a Shore D hardness 44 and a flexural modulus 11,000 psi.
ST ionomer high low mol wt blend **cover golf ball**

L10 ANSWER 442 OF 445 LWPI COPYRIGHT 2008 THE THOMSON CORP on STN

TI **Golf ball**, e.g. solid or wound, includes core layer(s), and cover layer(s) comprising silicone-urethane copolymer
TT TT: **GOLF BALL** SOLID WOUND CORE LAYER COVER COMPRISE SILICONE URETHANE COPOLYMER
PA (HARR-I) HARRIS K M; (RAJA-I) RAJAGOPALAN M; (ACUS-N) **ACUSHNET** CO

Search Question 6: What is the structure of the drug sumatriptan?

- What other names is this drug known by? (HINT: Remember to start in REGISTRY then cross over to CAplus to find relevant references)
- Are there any references discussing its preparation? (HINT: The preparation role (PREP) might be helpful here)
- If so, what are the names of some companies who have reported methods of preparing it?
- Have any of the companies received a patent for this?

```
=> FILE REGISTRY

=> E SUMATRIPTAN/CN

E1            1     SUMATRA YELLOW X 1940/CN
E2            1     SUMATRANOSIDE/CN
E3            1 --> SUMATRIPTAN/CN
E4            1     SUMATRIPTAN HEMISUCCINATE/CN
E5            1     SUMATRIPTAN HEMISULFATE/CN
E6            1     SUMATRIPTAN SUCCINATE/CN
E7            1     SUMATROL/CN
E8            1     SUMATROL, ACETATE/CN
E9            1     SUMATROLIC ACID/CN
E10           1     SUMAZID/CN
E11           1     SUMBIO/CN
E12           1     SUMBUL OIL/CN

=> S E3

L1            1 SUMATRIPTAN/CN

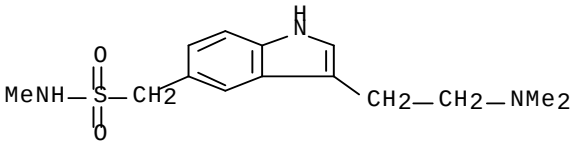
=> D

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2008 ACS on STN
RN   103628-46-2  REGISTRY
ED   Entered STN:  09 Aug 1986
CN   1H-Indole-5-methanesulfonamide, 3-[2-(dimethylamino)ethyl]-N-methyl-
      (CA INDEX NAME)
OTHER NAMES:
CN   3-[2-(Dimethylamino)ethyl]-N-methyl-1H-indole-5-methanesulfonamide
CN   GR 43175
CN   GR 43175X
CN   Sumatriptan
MF   C14 H21 N3 O2 S
CI   COM
SR   CA
LC   STN Files:   ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR,
         BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, CBNB, CHEMCATS,
         CHEMLIST, CIN, DDFU, DRUGU, EMBASE,
         IMSPATENTS, IMSRESEARCH, IPA, MEDLINE, MRCK*, PATDPASPC,
```

DISPLAY the REGISTRY record to see structure and chemical names.

(Continued on next page)

```
        PIRA, PS, RTECS*, SCISEARCH, TOXCENTER, USAN, USPAT2, USPATFULL
        (*File contains numerically searchable property data)
     Other Sources:   WHO
```




```
**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

            1071 REFERENCES IN FILE CA (1907 TO DATE)
              17 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            1076 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> FILE CAPLUS

=> S L1/PREP

          1076 L1
       4425242 PREP/RL
L2           22 L1/PREP
                (L1 (L) PREP/RL)

=> D L2 CS 1-10

L2   ANSWER 1 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   Chirogenix Co., Ltd., S. Korea

L2   ANSWER 2 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
CS   College of Material Science and Chemical Engineering, Zhejiang
     University, Hangzhou, 310027, Peop. Rep. China

L2   ANSWER 3 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   Natco Pharma Ltd., India

L2   ANSWER 4 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   USA

L2   ANSWER 5 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
CS   Varian Inc., Middelburg, Neth.

L2   ANSWER 6 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   India

L2   ANSWER 7 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   Reddy's Laboratories Limited, India; Reddy's Laboratories, Inc.

L2   ANSWER 8 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   Biocatalytics, Inc., USA

L2   ANSWER 9 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   Vita-Invest, S. A., Spain; Quimica Sintetica, S. A.
```

Use the PREP role to find all types of preparations.

Use CS to DISPLAY the CS (Corporate Source) field.

(Continued on next page)

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L2   ANSWER 10 OF 22  CAPLUS  COPYRIGHT 2008 ACS on STN
PA   Knoll Aktiengesellschaft, Germany

=> ANALYZE

ENTER ANSWER SET OR ANALYZE L# OR (L2):L2
ENTER ANSWER NUMBER OR RANGE (1-):1-
ENTER DISPLAY CODE (TI) OR ?:CS
L3          ANALYZE L2 1- CS :      25 TERMS

=> D

L3          ANALYZE L2 1- CS :      25 TERMS

TERM #   # OCC  # DOC  % DOC CS
------ ------- ------ ------ ---------------
     1       2      2   9.09 ORGANIC CHEMICAL TECHNOLOGY RESEARCH GROUP
                             OF THE H
     2       1      1   4.55 BIOCATALYTICS, INC., USA
     3       1      1   4.55 CENT. RES. DIV., PFIZER INC., GROTON, CT,
                             06340, US
     4       1      1   4.55 CENTRAL RESEARCH DIVISION, PFIZER INC.,
                             GROTON, CT,
     5       1      1   4.55 CHIROGENIX CO., LTD., S. KOREA
     6       1      1   4.55 COLLEGE OF MATERIAL SCIENCE AND CHEMICAL
                             ENGINEERIN
     7       1      1   4.55 DYER, ALISON, MARGARET
     8       1      1   4.55 FARMARC NEDERLAND B.V., NETH.
     9       1      1   4.55 GLAXO GROUP LTD., UK
    10       1      1   4.55 IMIDEX, S.A., SPAIN
15 MORE TERMS WITH AN OCCURRENCE COUNT OF 1

=> S L2 AND PATENT/DT

       5767441 PATENT/DT
L4          15 L2 AND PATENT/DT

=> D TI 1-5

L4   ANSWER 1 OF 15  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Synthesis of sumatriptan via simplified low-cost process

L4   ANSWER 2 OF 15  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Fischer indolization process in the preparation of high-purity
     sumatriptan

L4   ANSWER 3 OF 15  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Prodrug compositions including amino acids

L4   ANSWER 4 OF 15  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   A preparation of high purity (dimethylamino)ethylindole derivative
     and its salts

L4   ANSWER 5 OF 15  CAPLUS  COPYRIGHT 2008 ACS on STN
TI   Pure Sumatriptan and succinate salt crystal forms
```

ANALYZE *is a useful command that allows for a statistical analysis of an answer set by up to 5 fields. Type the entire word at the arrow prompt, and then answer the prompts from STN:*
L2 *is the answer set that discusses preparations of sumatriptan.*
1- *Denotes that all of the answers will be analyzed.*
CS *indicates that the Corporate Source field will be analyzed.*

Refine the answer set to contain only patents.

Search Question 7: Find articles on the Type 2 diabetes drug Byetta and its effect on weight loss.

- What other names is this drug known by?
- Search in both CAplus and MEDLINE. (HINT: Remember to remove duplicates before displaying the first three answers from each file)

```
=> FILE REGISTRY

=> E BYETTA/CN

E1            1     BYELYANKACIN/CN
E2            1     BYESUKAR/CN
E3            1 --> BYETTA/CN
E4            1     BYF 1047/CN
E5            1     BYF 14182/CN
E6            1     BYFITOS/CN
E7            1     BYFOLAN/CN
E8            1     BYGONE/CN
E9            1     BYGRAN/CN
E10           1     BYH 22B-T/CN
E11           1     BYI 06830/CN
E12           1     BYI 8330/CN

=> S E3

L1            1 BYETTA/CN

=> D L1

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2008 ACS on STN
RN   141758-74-9  REGISTRY
ED   Entered STN:  12 Jun 1992
CN   L-Serinamide, L-histidylglycyl-L-α-glutamylglycyl-L-threonyl-L-
     phenylalanyl-L-threonyl-L-seryl-L-α-aspartyl-L-leucyl-L-seryl-L-
     lysyl-L-glutaminyl-L-methionyl-L-α-glutamyl-L-α-glutamyl-L-
     α-glutamyl-L-alanyl-L-valyl-L-arginyl-L-leucyl-L-phenylalanyl-L-
     isoleucyl-L-α-glutamyl-L-tryptophyl-L-leucyl-L-lysyl-L-
     asparaginylglycylglycyl-L-prolyl-L-seryl-L-serylglycyl-L-alanyl-L-prolyl-
     L-prolyl-L-prolyl-  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Exendin 3 (Heloderma horridum), 2-glycine-3-L-glutamic acid-
CN   Exendin 4 (Heloderma suspectum) (9CI)
OTHER NAMES:
CN   12: PN: WO0041546 FIGURE: 2 claimed protein
CN   1: PN: US20060171920 SEQID: 1 claimed protein
CN   2: PN: WO0066629 FIGURE: 2 unclaimed protein
CN   3: PN: WO0041548 PAGE: 65 unclaimed protein
CN   3: PN: WO2005019262 SEQID: 3 claimed protein
CN   476: PN: WO2004005342 PAGE: 46 claimed protein
CN   4: PN: DE102004043153 PAGE: 14/17 claimed protein
CN   7: PN: WO2005019262 SEQID: 3 claimed protein
CN   AC 2993
```

(Continued on next page)

```
CN   AC 2993A
CN   Byetta
CN   Exenatide
CN   Exenatide LAR
FS   PROTEIN SEQUENCE
DR   286014-72-0, 335149-21-8
MF   C184 H282 N50 O60 S
CI   COM, MAN
SR   CA
LC   STN Files:   ADISINSIGHT, AGRICOLA, BIOSIS, CA, CAPLUS, CASREACT,
       CHEMCATS, CIN, CSCHEM, EMBASE, IMSPATENTS, IMSRESEARCH, IPA, PATDPASPC,
       PS, RTECS*, TOXCENTER, USAN, USPAT2, USPATFULL
         (*File contains numerically searchable property data)

**RELATED SEQUENCES AVAILABLE WITH SEQLINK**

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
*** USE 'SQD' OR 'SQIDE' FORMATS TO DISPLAY SEQUENCE ***

**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

             257 REFERENCES IN FILE CA (1907 TO DATE)
              12 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
             261 REFERENCES IN FILE CAPLUS (1907 TO DATE)


=> SEL CHEM L1

E13 THROUGH E29 ASSIGNED

=> D SEL E13-E29

E13          1     AC 2993/BI
E14          1     AC 2993A/BI
E15          1     BYETTA/BI
E16          1     EXENATIDE LAR/BI
E17          1     EXENATIDE/BI
E18          1     EXENDIN 4 (HELODERMA SUSPECTUM)/BI
E19          1     1: PN: US20060171920 SEQID: 1 CLAIMED PROTEIN/BI
E20          1     12: PN: WO0041546 FIGURE: 2 CLAIMED PROTEIN/BI
E21          1     141758-74-9/BI
E22          1     2: PN: WO0066629 FIGURE: 2 UNCLAIMED PROTEIN/BI
E23          1     286014-72-0/BI
E24          1     3: PN: WO0041548 PAGE: 65 UNCLAIMED PROTEIN/BI
E25          1     3: PN: WO2005019262 SEQID: 3 CLAIMED PROTEIN/BI
E26          1     335149-21-8/BI
E27          1     4: PN: DE102004043153 PAGE: 14/17 CLAIMED PROTEIN/BI
E28          1     476: PN: WO2004005342 PAGE: 46 CLAIMED PROTEIN/BI
E29          1     7: PN: WO2005019262 SEQID: 3 CLAIMED PROTEIN/BI
```

Selects all the chemical names from REGISTRY.

```
=> FILE CAPLUS MEDLINE

=> SET MSTEPS ON

SET COMMAND COMPLETED

=> S E13-E29

L2         323 FILE CAPLUS
L3         486 FILE MEDLINE

TOTAL FOR ALL FILES
L4         809 ("AC 2993"/BI OR "AC 2993A"/BI OR BYETTA/BI OR "EXENATIDE LAR"/B
               I OR EXENATIDE/BI OR "EXENDIN 4 (HELODERMA SUSPECTUM)"/BI OR
               "1: PN: US20060171920 SEQID: 1 CLAIMED PROTEIN"/BI OR "12: PN:
               WO0041546 FIGURE: 2 CLAIMED PROTEIN"/BI OR 141758-74-9/BI OR
               "2: PN: WO0066629 FIGURE: 2 UNCLAIMED PROTEIN"/BI OR 286014-72-0
               /BI OR "3: PN: WO0041548 PAGE: 65 UNCLAIMED PROTEIN"/BI OR "3:
               PN: WO2005019262 SEQID: 3 CLAIMED PROTEIN"/BI OR 335149-21-8/BI
               OR "4: PN: DE102004043153 PAGE: 14/17 CLAIMED PROTEIN"/BI OR
               "476: PN: WO2004005342 PAGE: 46 CLAIMED PROTEIN"/BI OR "7: PN:
               WO2005019262 SEQID: 3 CLAIMED PROTEIN"/BI)

=> S WEIGHT LOSS

L5       54372 FILE CAPLUS
L6       38738 FILE MEDLINE

TOTAL FOR ALL FILES
L7       93110 WEIGHT LOSS

=> S L4 AND L7

L8          38 FILE CAPLUS
L9          62 FILE MEDLINE

TOTAL FOR ALL FILES
L10        100 L4 AND L7

=> SET DUPORDER FILE

SET COMMAND COMPLETED

=> DUP REM L8 L9

PROCESSING COMPLETED FOR L8
PROCESSING COMPLETED FOR L9
L11         78 DUP REM L8 L9 (22 DUPLICATES REMOVED)
               ANSWERS '1-38' FROM FILE CAPLUS
               ANSWERS '39-78' FROM FILE MEDLINE
```

22 duplicate answers are removed and records are sorted by designated file order.

Displays 3 answers from each database.

```
=> D 1-3 FROM EACH

L11  ANSWER 1 OF 78  CAPLUS  COPYRIGHT 2008 ACS on STN DUPLICATE 1
AN   2008:878797  CAPLUS  Full-text
DN   149:119313
TI   Comparison of single and combined treatment with exenatide and metformin
     on menstrual cyclicity in overweight women with polycystic ovary syndrome
AU   Elkind-Hirsch, Karen; Marrioneaux, Ory; Bhushan, Madhu; Vernor, Denise;
     Bhushan, Rajat
CS   Woman's Health Research Institute, Baton Rouge, LA, 70815, USA
SO   Journal of Clinical Endocrinology and Metabolism (2008), 93(7), 2670-2678
     CODEN: JCEMAZ; ISSN: 0021-972X
PB   Endocrine Society
DT   Journal
LA   English
RE.CNT  39    THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11  ANSWER 2 OF 78  CAPLUS  COPYRIGHT 2008 ACS on STN DUPLICATE 2
AN   2008:609754  CAPLUS  Full-text
DN   149:321
TI   Incretin mimetics and dipeptidyl peptidase 4 inhibitors in clinical trials
     for the treatment of type 2 diabetes
AU   Mikhail, Nasser
CS   Endocrinology Division, Department of Medicine, Olive-View-UCLA Medical
     Center, Sylmar, CA, 91342, USA
SO   Expert Opinion on Investigational Drugs (2008), 17(6), 845-853
     CODEN: EOIDER; ISSN: 1354-3784
PB   Informa Healthcare
DT   Journal; General Review
LA   English
RE.CNT  61    THERE ARE 61 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11  ANSWER 3 OF 78  CAPLUS  COPYRIGHT 2008 ACS on STN DUPLICATE 3
AN   2008:482673  CAPLUS  Full-text
DN   148:554348
TI   Effects of exenatide versus insulin analogues on weight change in
     subjects with type 2 diabetes: a pooled post-hoc analysis
AU   Glass, Leonard C.; Qu, Yongming; Lenox, Sheila; Kim, Dennis; Gates,
     Jeffrey R.; Brodows, Robert; Trautmann, Michael; Bergenstal, Richard M.
CS   Lilly Research Laboratories, Indianapolis, IN, USA
SO   Current Medical Research and Opinion (2008), 24(3), 639-644
     CODEN: CMROCX; ISSN: 0300-7995
PB   Informa Healthcare
DT   Journal
LA   English
```

```
L11  ANSWER 39 OF 78     MEDLINE on STN
AN   2008231877     MEDLINE  Full-text
DN   PubMed ID: 18313669
TI   An albumin-exendin-4 conjugate engages central and peripheral circuits
     regulating murine energy and glucose homeostasis.
AU   Baggio Laurie L; Huang Qingling; Cao Xiemin; Drucker Daniel J
CS   Department of Medicine, Mt. Sinai Hospital, Toronto, Ontario, Canada.
SO   Gastroenterology, (2008 Apr) Volume 134, Number 4, pp. 1137-47.
     Electronic Publication: 2008-01-11.
     Journal code: 0374630. E-ISSN: 1528-0012.
CY   United States
DT   (COMPARATIVE STUDY)
     Journal; Article; (JOURNAL ARTICLE)
     (RESEARCH SUPPORT, NON-U.S. GOV'T)
LA   English
FS   Abridged Index Medicus Journals; Priority Journals
EM   200804
ED   Entered STN: 9 Apr 2008
     Last Updated on STN: 25 Apr 2008
     Entered Medline: 24 Apr 2008

L11  ANSWER 40 OF 78     MEDLINE on STN
AN   2008312008     IN-PROCESS  Full-text
DN   PubMed ID: 18475058
TI   Unmet needs among patients with type 2 diabetes and secondary failure to
     oral anti-diabetic agents.
AU   Pitocco D; Valle D; Rossi A; Gentilella R
CS   Institute of Medical Pathology, Catholic University of Sacred Heart, 00168
     Rome, Italy.. dariopitocco@virgilio.it
SO   Journal of endocrinological investigation, (2008 Apr) Volume 31, Number 4,
     pp. 371-9.
     Journal code: 7806594. E-ISSN: 1720-8386.
CY   Italy
DT   Journal; Article; (JOURNAL ARTICLE)
LA   English
FS   NONMEDLINE; IN-PROCESS; NONINDEXED; Priority Journals
ED   Entered STN: 14 May 2008
     Last Updated on STN: 15 May 2008

L11  ANSWER 41 OF 78     MEDLINE on STN
AN   2008339242     MEDLINE  Full-text
DN   PubMed ID: 18500914
TI   Managed care perspective on three new agents for type 2 diabetes.
AU   VanDeKoppel Shawna; Choe Hae Mi; Sweet Burgunda V
CS   University of Michigan Health System, College of Pharmacy, Ann Arbor, MI,
     USA.
SO   Journal of managed care pharmacy : JMCP, (2008 May) Volume 14, Number 4,
     pp. 363-80.  Ref: 56
     Journal code: 9605854. ISSN: 1083-4087.
CY   United States
DT   Journal; Article; (JOURNAL ARTICLE)
     General Review; (REVIEW)
LA   English
FS   Priority Journals
EM   200807
ED   Entered STN: 28 May 2008
     Last Updated on STN: 18 Jul 2008
     Entered Medline: 17 Jul 2008
```

Search Question 8: In 2005, a number of petroleum companies announced their intent to eliminate MTBE from gasoline due to drinking and ground water contamination concerns and continuing liability exposure.

- Find three journal review articles on this topic in CAplus. (HINT: Use both left and right truncation (SLART) to enhance your search retrieval for water)

```
=> FILE REGISTRY

=> E MTBE/CN

E1            1     MTBA PROTEIN (SINORHIZOBIUM MELILOTI STRAIN 1021
                    GENE SMA1328)/CN
E2            1     MTBD/CN
E3            1 --> MTBE/CN
E4            1     MTBHQ/CN
E5            1     MTBK/CN
E6            1     MTBO/CN
E7            1     MTBP PROTEIN (MOUSE STRAIN MIX FVB/N, C57BL/6J CLONE
                    IMAGE:3489758 GENE MTBP)/CN
E8            1     MTC 01/CN
E9            1     MTC 01 (OXIDE)/CN
E10           1     MTC 102/CN
E11           1     MTC 104/CN
E12           1     MTC 840/CN

=> S E3

L1            1 MTBE/CN

=> D L1

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2008 ACS on STN
RN   1634-04-4  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Propane, 2-methoxy-2-methyl-  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Ether, tert-butyl methyl (6CI, 7CI, 8CI)
OTHER NAMES:
CN   1,1-Dimethylethyl methyl ether
CN   2-Methoxy-2-methylpropane
CN   2-Methyl-2-methoxypropane
CN   Methyl 1,1-dimethylethyl ether
CN   Methyl tert-butyl ether
CN   Methyl tertiary butyl ether
CN   MTBE
CN   t-Butyl methyl ether
CN   tert-Butoxymethane
CN   tert-Butyl methyl ether
MF   C5 H12 O
CI   COM
```

(Continued on next page)

```
LC   STN Files:   AGRICOLA, ANABSTR, BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT,
         CBNB, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSNB, DDFU,
         DETHERM*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2,
         IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, PIRA, RTECS*,
         SPECINFO, SYNTHLINE, TOXCENTER, ULIDAT, USPAT2, USPATFULL
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)

 t-Bu— O—Me


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

            7883 REFERENCES IN FILE CA (1907 TO DATE)
              21 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            7917 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              34 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> SEL CHEM L1

E13 THROUGH E23 ASSIGNED

=> D SEL E13-E23

E13          1     METHYL TERT-BUTYL ETHER/BI
E14          1     METHYL TERTIARY BUTYL ETHER/BI
E15          1     METHYL 1,1-DIMETHYLETHYL ETHER/BI
E16          1     MTBE/BI
E17          1     T-BUTYL METHYL ETHER/BI
E18          1     TERT-BUTOXYMETHANE/BI
E19          1     TERT-BUTYL METHYL ETHER/BI
E20          1     1,1-DIMETHYLETHYL METHYL ETHER/BI
E21          1     1634-04-4/BI
E22          1     2-METHOXY-2-METHYLPROPANE/BI
E23          1     2-METHYL-2-METHOXYPROPANE/BI

=> FILE CAPLUS

=> S E13-E23

L2        8891 ("METHYL TERT-BUTYL ETHER"/BI OR "METHYL TERTIARY BUTYL
               ETHER"/BI OR "METHYL 1,1-DIMETHYLETHYL ETHER"/BI OR MTBE/BI
               OR "T-BUTYL METHYL ETHER"/BI OR TERT-BUTOXYMETHANE/BI OR
               "TERT-BUTYL METHYL ETHER"/BI OR "1,1-DIMETHYLETHYL METHYL
               ETHER"/BI OR 1634-04-4/BI OR 2-METHOXY-2-METHYLPROPANE/BI
               OR 2-METHYL-2-METHOXYPROPANE/BI)

=> S ?WATER?

L3     2853616 ?WATER?
```

CAplus supports SLART (simultaneous left and right truncation) and allows you to search for variations of water, i.e., groundwater and drinking-water.

```
=> S CONTAMINAT? OR POLLUTI?

        254387 CONTAMINAT?
        425345 POLLUTI?
L4      618116 CONTAMINAT? OR POLLUTI?

=> S L3 (5A) L4

L5      169301 L3 (5A) L4

=> S L2 AND L5

L6        1170 L2 AND L5

=> E A/DT

**** START OF FIELD ****
E24          0 --> A/DT
E25     272590     B/DT
E26      11432     BIO/DT
E27      11432     BIOGRAPHY/DT
E28     272590     BOOK/DT
E29      43196     BOOK REVIEW/DT
E30      43196     BR/DT
E31    1156193     C/DT
E32        121     COMPUTER MAGNETIC DISK/DT
E33     120192     COMPUTER OPTICAL DISK/DT

=> E

E34    1156193     CONFERENCE/DT
E35     413714     D/DT
E36     413714     DISSERTATION/DT
E37      19750     ED/DT
E38      19750     EDITORIAL/DT
E39      13174     ER/DT
E40      13174     ERRATA/DT
E41    2044284     GENERAL REVIEW/DT
E42    2044284     GR/DT
E43   19934381     J/DT
E44   19934381     JOURNAL/DT
E45      23717     LE/DT

=> S L6 AND GENERAL REVIEW/DT

       2044284 GENERAL REVIEW/DT
L7         109 L6 AND GENERAL REVIEW/DT

=> S L7 AND PY=>2006

       2055867 PY=>2006
L8           4 L7 AND PY=>2006
```

When you Expand (E) on the Data Type (DT) field, you are able to locate the field name that covers review articles = General Review or GR.

Limits articles published since 2005.

```
=> D SCAN

L8    4 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   60-0 (Waste Treatment and Disposal)
TI   Biodegradation of methyl tert-butyl ether (MTBE)
ST   review methyl butyl ether pollution biodegrdn; bioremediation methyl
     butyl ether pollution review
IT   Decomposition
        (biodegrdn.; in-situ biodegrdn. of Me tert-Bu ether (MTBE))
IT   Soil reclamation
        (biol.; in-situ biodegrdn. of Me tert-Bu ether (MTBE))
IT   Soil pollution
        (control; in-situ biodegrdn. of Me tert-Bu ether (MTBE))
IT   Groundwater pollution
        (in-situ biodegrdn. of Me tert-Bu ether (MTBE))
IT   1634-04-4, Methyl tert-butyl ether
     RL: BCP (Biochemical process); POL (Pollutant); REM (Removal or
         disposal);
     BIOL (Biological study); OCCU (Occurrence); PROC (Process)
        (in-situ biodegrdn. of Me tert-Bu ether (MTBE))

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L8    4 ANSWERS   CAPLUS  COPYRIGHT 2008 ACS on STN
CC   51 (Fossil Fuels, Derivatives, and Related Products)
TI   A review of studies on pollution treatment for gasoline additive
     MTBE
ST   review methyl tertbutyl ether contamination biodegrdn adsorption
     advanced oxidn

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> D BIB ABS 1-4

L8   ANSWER 1 OF 4  CAPLUS  COPYRIGHT 2008 ACS on STN
AN   2007:429631  CAPLUS  Full-text
TI   A review of studies on pollution treatment for gasoline additive
     MTBE
AU   Lu, Jia; Xu, Fang; Cai, Weimin
CS   School of Environmental Science and Engineering, Shanghai Jiaotong
     University, Shanghai, 200240, Peop. Rep. China
SO   Huanjing Wuran Yu Fangzhi (2006), 28(5), 365-368
     CODEN: HWYFEW; ISSN: 1001-3865
PB   Huanjing Wuran Yu Fangzhi Zazhishe
DT   Journal; General Review
LA   Chinese
AB   A review with 42 refs. is given on treatment of gasoline oxygenate
     MTBE. Me tert-Bu ether has been used extensively in the world as a
     gasoline additive to enhance fuel octane ratings and reduce vehicle
     emissions.  The widespread use of MTBE has led to its contamination
     of soil and groundwater.  This paper focuses on the recent
     publications to show the newest progress of treatment of MTBE.  Both
     aerobic and anaerobic strategies may be applicable, and
     phytoremediation is a useful option. Adsorption and advanced
     oxidation can remove MTBE in a short period.
```

(Continued on next page)

L8 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:1189274 CAPLUS Full-text
DN 146:67938
TI Analysis, occurrence and fate of **MTBE** in the aquatic environment over the past decade
AU Rosell, Monica; Lacorte, Silvia; Barcelo, Damia
CS Department of Environmental Chemistry, IIQAB-CSIC. Jordi Girona 18-26, Catalonia, E-08034, Spain
SO TrAC, Trends in Analytical Chemistry (2006), 25(10), 1016-1029 CODEN: TTAEDJ; ISSN: 0165-9936
PB Elsevier Ltd.
DT Journal; **General Review**
LA English
AB A review. In the past decade, it became progressively more evident that fuel oxygenate Me tert-Bu ether (**MTBE**) is nearly ubiquitous in the worldwide environment. The frequency of detection of **MTBE** rivals other volatile organic compds. (VOCs) that were produced and used for a much longer time. Its mere presence in **water** bodies used as **drinking-water** reservoirs (rivers, lakes, or **groundwater** tables) has aroused concern about its potential sources, persistence and possible adverse effects (aesthetic or toxic implications) for end users and aquatic life. This article aims to provide an updated overview of the anal. techniques applied for current environmental concns., the occurrence of **MTBE** as a pollutant in the different aquatic compartments, the relevance of diffuse and point sources and the different options for remediation of **MTBE**-contaminated sites.
RE.CNT 66 THERE ARE 66 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:834198 CAPLUS Full-text
DN 145:382341
TI Enzymes and genes involved in the aerobic biodegradation of methyl tert-butyl ether (**MTBE**)
AU Lopes Ferreira, Nicolas; Malandain, Cedric; Fayolle-Guichard, Francoise
CS Biotechnology and Biomass Chemistry Department, Institut Francais du Petrole, Rueil-Malmaison, 92852, Fr.
SO Applied Microbiology and Biotechnology (2006), 72(2), 252-262 CODEN: AMBIDG; ISSN: 0175-7598
PB Springer
DT Journal; **General Review**
LA English
AB A review is given. Fuel oxygenates, mainly Me tert-Bu ether (**MTBE**) but also Et tert-Bu ether (ETBE), are added to gasoline in replacement of Pb tetra-Et to enhance its octane index. Their addition also improves the combustion efficiency and therefore decreases the emission of pollutants (CO and hydrocarbons). On the other hand, MTBE, being highly soluble in **water** and recalcitrant to biodegrdn., is a major pollutant of **water** in aquifers contaminated by **MTBE**-supplemented gasoline during accidental release. **MTBE** was shown to be degraded through cometabolic oxidation or to be used as a C and energy source by a few microorganisms. We have summarized the present state of knowledge about the microorganisms involved in **MTBE** degradation and the **MTBE** catabolic pathways. The role of the oxidation can remove **MTBE** in a short period.

(Continued on next page)

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RE.CNT  52    THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8   ANSWER 4 OF 4  CAPLUS  COPYRIGHT 2008 ACS on STN
AN   2006:629332  CAPLUS  Full-text
DN   145:88502
TI   Biodegradation of methyl tert-butyl ether (MTBE)
AU   Ohkubo, Norio; Yagi, Osami
CS   Dep. Water Sewage Works, Bureau of Waterworks, Hitachi City,
     Hitachi, 316-0025, Japan
SO   Yosui to Haisui (2006), 48(6), 503-510
     CODEN: YOHAAP; ISSN: 0513-5907
PB   Sangyo Yosui Chosakai
DT   Journal; General Review
LA   Japanese
AB   A review on in-situ biodegrdn. of Me tert-Bu ether in soils and
     groundwater.
```

Search Question 9: Choose a drug or chemical of your choice.

- Locate other names that the drug or chemical are known by, then search in relevant databases and find recent patents and journal articles

No solution for this is provided as the answers will vary, but check your search strategy against the multifile substance based search in the workbook.