CAS STNEXT® COFFEE LECTURE

EXPLORE ENGINEERING CONTENT

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Agenda

- Engineering content on CAS STNext
- Database clusters
- INDEX search
- Use cases

Databases in this presentation:

INSPEC

- **PRODUCER:** Institution of Engineering and Technnology (IET)
- **CONTENT:** All areas of science and technology. Bibliographic information, abstracts, and indexing
- **TIME COVERAGE:** 1898-present
- **FILE SIZE:** >24.5 million records
- **FEATURES:** CT (Controlled Terms, incl. thesaurus), IPC classification codes, 2.9M citations available

COMPENDEX

- **PRODUCER:** Elsevier
- **CONTENT:** All areas of science and technology. Bibliographic information, abstracts, and indexing
- **TIME COVERAGE:** 1970-present
- **FILE SIZE:** >20.5 million records
- **FEATURES:** CT (Controlled Terms, incl. thesaurus), CC (Classification Code), STN numeric property search

TEMA

- **PRODUCER:** WTI Frankfurt
- **CONTENT:** Engineering and technology. Bibliographic information, indexing (no thesaurus), and abstracts.
- **TIME COVERAGE:** 1968-present
- **FILE SIZE**: >6.8 million records
- **FEATURES:** Records in German and/or English, Controlled terms in English (CT) and German (CTDE), STN numeric property search

PQSCITECH

- **PRODUCER:** ProQuest LLC
- **CONTENT:** All areas of science and technology. Bibliographic information, abstracts, and indexing
- **TIME COVERAGE:** 1962-present
- **FILE SIZE:** >33.5 million records
- **FEATURES:** Uncontrolled terms (UT) are searched with CT and BI, STN numeric property search

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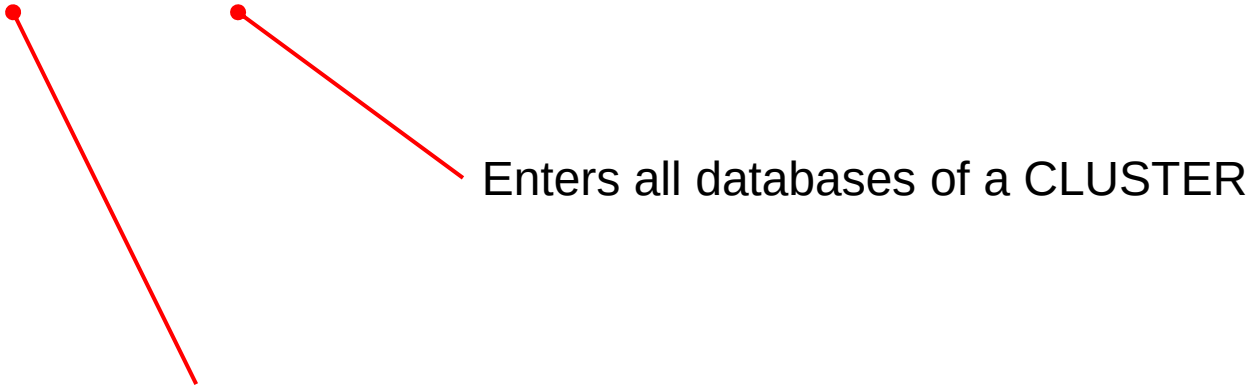
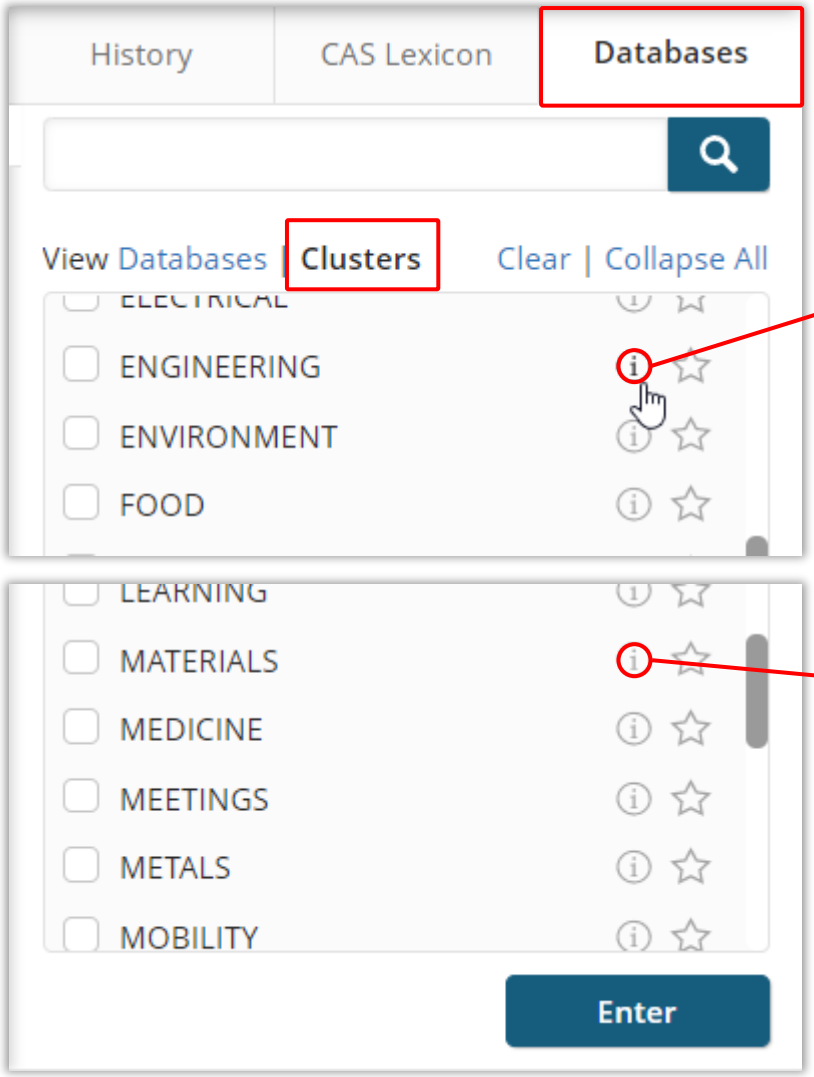
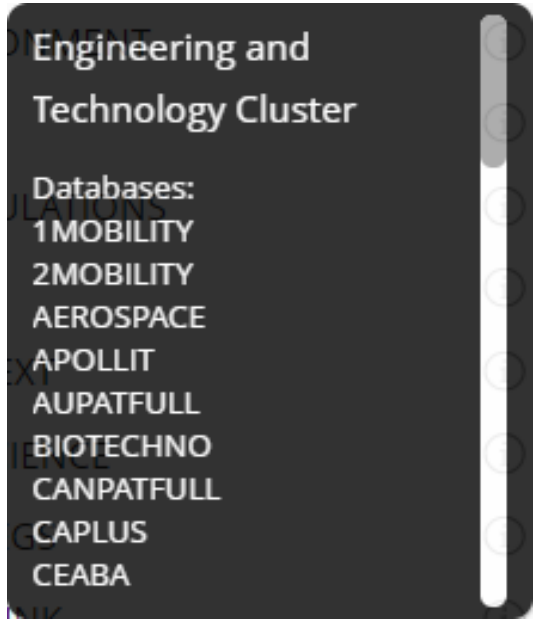
Database-groups: CLUSTER

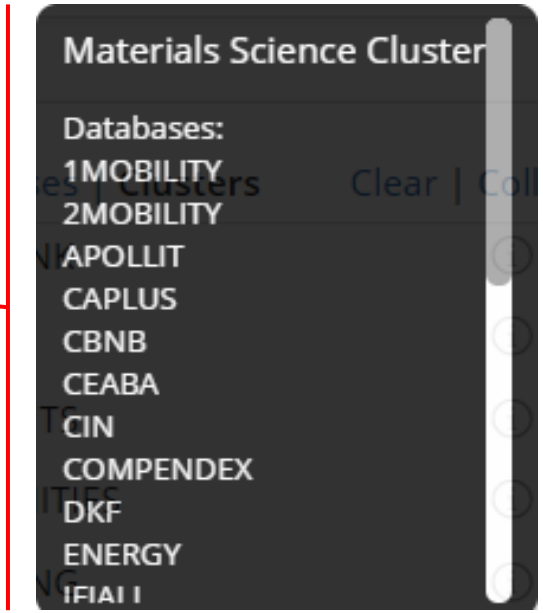
- CLUSTER = predefined group of files with analogous or complementary subject coverage
- Opening a cluster = opening of all the included files
- Define your custom CLUSTER by SET CLUSTER
- Use INDEX (or FILE) command to open a cluster



The Engineering & Material Science clusters





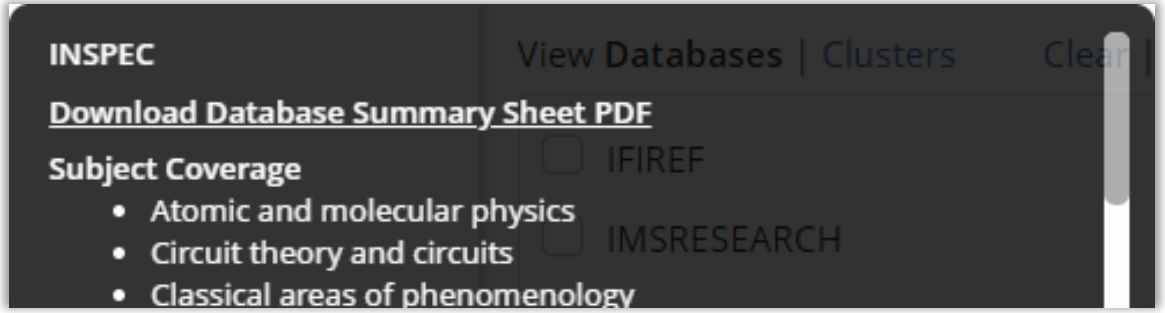


=> HELP CLUSTER for more information

STN Database Summary Sheets are the authoritative source of database specific search information

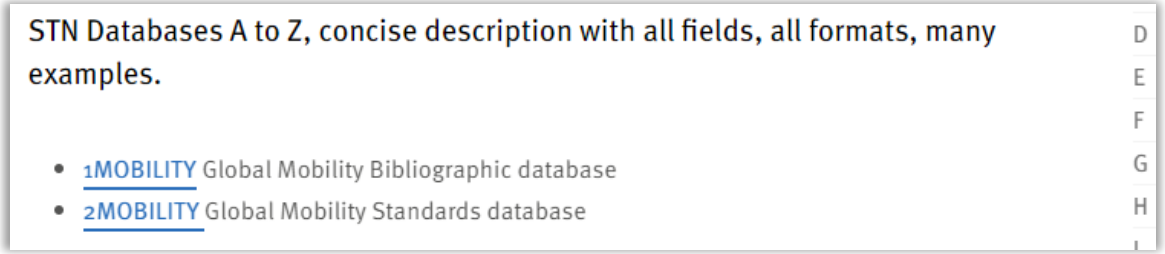
- Contains content of database and subject coverage
- Update frequency
- Value-added information
- How to search and display various fields
- Database producer contact information

Link in STNext database tab:



WWW.STN-INTERNATIONAL.COM

https://stn-international.com/en/customersupport/database-summary-sheets



INSPEC Database Summary Sheet content

INSPEC

STN® THE CHOICE OF PATENT EXPERTS™

Subject Coverage	• Atomic and molecular physics • Circuit theory and circuits • Classical areas of phenomenology • Communications • Components, electronic devices and materials
Coverage	1898-present
Updates	Weekly
Database Producer	The Institution of Engineering and Technology (IET) Michael Faraday House, Six Hills Way Stevenage, Herts SG1 2AY, United Kingdom
Sources	• Journals • Reports • Conferences • Books • Dissertations • Patents (until 1976)

Search fields

Search and Display Field Codes

Fields that allow left truncation are indicated by an asterisk (*).

General Search Fields

Search Field Name	Search Code	Search Examples	Display Codes
Basic Index* (contains single words from abstract (AB), controlled term (CT), supplementary term (ST), controlled term original (CTO), and title (TI) fields)	None or /BI	S MICROELECTRON? S QUANTUM HALL S LIQUID(A)CRYST? S AL203-NA20 S ?LASER?	0AB, CT, CTO, ST, TI
Abstract*	/AB	S NEUTRON ?RADIATION?/AB	AB
Accession Number	/AN	S 1990:3615482/AN	AN
Application Date **(1)**	/AD	S AD = APR 1969	AI
Application Year **(1)**	/AY	S AY = 1970	AI
Astronomical Object	/AO	S WESTERBORK-53 80/AO S “1130+34”/AO	AO
Author (editor, patent inventor)	/AU	S SMITH S/AU S SMITH, S/AU	AU
Availability **(2)**	/AV	S NASA CENTER/AV	AV
Chemical Indexing **(5,6)**	/CHI	S BA DOP/CHI	CHI

Property search field

Property Fields 1,2)

Field Code	Property	Unit
/AGE	Age	yr (Year)
/ALT	Altitude	M (Metre)
/BAW	Bandwidth	Hz (Hertz)
/BIR	Bit Rate	bit/s (Bit per Second)
/BYR	Byte Rate	Byte/s (Byte per Second)
/CAP	Capacitance	F (Farad)
/COE	Computer Execution Rate	IPS (Instruct. per Second)
/CON	Conductance	S (Siemens)
/COS	Computer Speed	FLOPS (Floating Point Operations per Second)
/CUR	Curren	A (Amp)
/DEP	Depth	m (Metre)
/DIS	Distance	m (Metre)
/ECND	Electric Conductivity	S/m (Siemens per Metre)
/EEV	Electron Volt Energy	eV (Electron Volt)
/EFF	Efficiency	percent
/ENE	Energy	J (Joule)
/EREST (or /REE)	Electrical Resistivity	Ohm (Ohm Metre)
/FRE	Frequency	Hz (Hertz)
/GAD	Galactic Distance	Pc (Parsec)
/GAI	Gain	dB (Decibel)

Thesauri

Physical Properties (/PHP) Thesaurus

Code	Content	Examples
ALL	All Associated Terms	E CURRENT+ALL/PHP
NOTE	Notes associated with the Terms (SELF, INSPEC, CGS, ENG, FPS, MKS, SI, STN, OTHERS, DEF, DA)	E ALTITUDE+NOTE/PHP
PFT	All Preferred, Forbidden Terms (SELF, UTP, USE, UF)	E APPARENT POWER+PFT/PHP
UF	Used For (Preferred and Forbidden Terms)	E SIZE+UF/PHP
UNITE	Unit (SELF, FQS, INSPEC, CGS, ENG, FPS, MKS, SI, STN, OTHERS)	E STORAGE CAPACITY+UNIT/PHP
USE	Use (Forbidden and Preferred Terms)	E RADIUS+USE/PHP

PHP Thesaurus Field Descriptors

Code	Content
SELF	Self Term, Descriptor
FQS	Field Qualifier Search
INSPEC	Unit given by INSPEC
CGS	CGS Unit Symbol
ENG	Engineering Unit Symbol

Display fields and formats

DISPLAY and PRINT Formats

Any combination of formats may be used to display or print answers. Multiple codes must be separated by spaces or commas, e.g., D L1 1-5 TI AU. The fields are displayed or printed in the order requested.

Hit-term highlighting is available for all fields. Highlighting must be ON during SEARCH to use the HIT, KWIC, and OCC formats.

Format	Content	Examples
AB	Abstract	D TI AB
AI	Application Information	
AN	Accession Number	D 1-5 AN
AO	Astronomical Object	D AO
AU	Author	D AU TI
CC	Classification Code	D CC
CCO	Classification Code, Original	D CCO
CHI	Chemical Indexing	D CHI
CS	Corporate Source (format includes AU)	D CS
CT	Controlled Term	D CT
CTO	Controlled Term, Original	D CTO
CY	Country	D CY
DN	Document Number	D AN DN
DT	Document Type (incl. Treatment Code)	D DT

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- INDEX search
- Use cases

Testing search queries: INDEX command

- INDEX opens **any number of files** (≥ 2) or **clusters**
- EXPAND and SEARCH commands are available
- Use the INDEX environment to…
  - Identify files which have results in response to your query
  - See how many hits you receive
  - Rank files according to their hits

! **INDEX does not create answer sets** (only queries – display of documents is not possible)

- Subsequently open relevant files with the **FILE command**
- **SEARCH** in open files to create answer sets

Searching for Engineering Content: workflow

1. Enter STNindex with the INDEX command (e.g. INDEX ENGINEERING)
2. Run your search in STNindex (alternatively, use the EXPAND command)
3. Enter the database(s) that contain answers based on an STNindex scan.
4. Search the query in the database(s).
5. Remove duplicates.
6. Review results.

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Use Case: Tungsten materials and photonic crystals

- Use INDEX search to find candidate engineering databases with relevant hits
- Enter files with most relevant results and execute search query to create answer sets
- Leverage file-specific data (controlled terminology, value-added indexing) and features to enhance retrieval
- Remove duplicates and DISPLAY results

Enter the ENGINEERING Cluster

```
=> INDEX ENGINEERING

COST IN U.S. DOLLARS                        SINCE FILE          TOTAL
                                               ENTRY          SESSION
FULL ESTIMATED COST                             0.35            0.35

INDEX '1MOBILITY, 2MOBILITY, APOLLIT, AUPATFULL, BIOTECHNO, CANPATFULL, CAPLUS,
       CEABA, CIN, CNFULL, COMPENDEX, DEFULL, EPFULL, FRFULL, GBFULL, GEOREF,
       IFIALL, INFULL, INSPEC, JPFULL, KRFULL, NTIS, PCTFULL, PIRA, PQSCITECH,
       RAPRA, RDISCLOSURE, RUFULL, ...' ENTERED AT 11:13:58 ON 02 MAY 2024

40 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.
```


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INDEX tests search query in all cluster files

```
=> S TUNGSTEN (5A) (MONOLAYER? OR MONO LAYER? OR NANOFILM? OR NANO FILM?)

          19   FILE AUPATFULL
          20   FILE CANPATFULL
        2977   FILE CAPLUS
          21   FILE CEABA
         272   FILE CNFULL
         588   FILE COMPENDEX

         146   FILE WPINDEX
         146   FILE WPIX

  30 FILES HAVE ONE OR MORE ANSWERS,    40 FILES SEARCHED IN STNINDEX

L1    QUE TUNGSTEN (5A) (MONOLAYER? OR MONO LAYER? OR NANOFILM? OR NANO FILM?)
```

All files with hits are shown in alphabetical order by file name

The search query is saved for later use in full database searches

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D RANK sorts by number of hits

```
=> D RANK

F1          2781    CAPLUS
F2           711    INSPEC
F3           606    SCISEARCH
F4           588    COMPENDEX
F5           135    PQSCITECH
F6           120    TEMA
F7            21    CEABA
F8            13    NTIS
F9             6    RAPRA
F10            4    PIRA
```

Sorting by number of records per database helps determine highly relevant files to investigate more closely

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Add further refinements if needed:

```
=> S L1 NOT PATENT/DT

        2781   FILE CAPLUS
          21   FILE CEABA
         588   FILE COMPENDEX
         711   FILE INSPEC
          13   FILE NTIS
           4   FILE PIRA
         135   FILE PQSCITECH
           6   FILE RAPRA
         606   FILE SCISEARCH
         120   FILE TEMA

  10 FILES HAVE ONE OR MORE ANSWERS,    40 FILES SEARCHED IN STNINDEX

L2    QUE L1 NOT PATENT/DT
```

Adding additional query requirements narrows results to more manageable answer sets

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Use FILE command to enter full databases and execute saved search query

```
=> FILE F2-F6; S L2

L3          711 FILE INSPEC
L4          606 FILE SCISEARCH
L5          588 FILE COMPENDEX
L6          135 FILE PQSCITECH
L7          120 FILE TEMA

TOTAL FOR ALL FILES
L8         2160 L2
```


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Preview results from each file

L18 ANSWER 20 OF 25 TEMA COPYRIGHT 2024 WTI-FRANKFURT-DIGITAL GMBH on STN.

de (WS2)
c crystal
i; Shi, Lei;
ate Key
CN
Seiten, 5

L18 ANSWER 23 OF 25 PQSCITECH COPYRIGHT 2024 ProQuest LCC on STN.

AN 2022:47955 PQSCITECH Full-text

DN 2627807713

TI Optical Mode Tuning of **Monolayer** **Tungsten** Diselenide (WSe2) by Integrating with One-Dimensional **Photonic** **Crystal** through Exciton-**Photon** Coupling

AU Konthoujam James Singh; Hao-Hsuan Ciou; Ya-Hui, Chang ; Yen-Shou, Lin ; Hsiang-Ting, Lin ; Po-Cheng, Tsai ; Shih-Yen, Lin ; Min-Hsiung Shih; Min-Hsiung Shih; Hao-Chung, Kuo ; Hao-Chung, Kuo

SO Nanomaterials, Vol. 12, No. 3, 20220101 E-ISSN: 2079-4991
DOI: https://doi.org/10.3390/nano12030425
Published by: MDPI AG, Basel

DT Journal; Article

LA English

ED Entered STN: 22 Feb 2022
Last updated on STN: 27 Dec 2023

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File-specific indexing can enhance search strategies

```
=> S L3 AND (?PHOTON? (2A) ?CRYSTAL?)

         515085 ?PHOTON?
        2060488 ?CRYSTAL?
          51968 ?PHOTON? (2A) ?CRYSTAL?
L9           11 L3 AND (?PHOTON? (2A) ?CRYSTAL?)

=> ANA 1- CT

L10          ANALYZE L9 1- CT :       42 TERMS
```


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File-specific indexing can enhance search strategies

=> S L3 AND (?PHOTON? (2A) ?CRYSTAL?)

L9

=> AN

L10

TERM #	# OCC	# DOC	% DOC	CT
1	11	11	100.00	TUNGSTEN COMPOUNDS
2	10	10	90.91	MONOLAYERS
3	10	10	90.91	PHOTONIC CRYSTALS
4	5	5	45.45	EXCITONS
5	4	4	36.36	POLARITONS
6	3	3	27.27	LASER CAVITY RESONATORS
7	3	3	27.27	LIGHT POLARISATION
8	3	3	27.27	SEMICONDUCTOR LASERS
9	3	3	27.27	SILICON COMPOUNDS
10	2	2	18.18	BOUND STATES
11	2	2	18.18	INTEGRATED OPTICS
12	2	2	18.18	LASER MODES
13	2	2	18.18	PHOTOLUMINESCENCE
14	2	2	18.18	Q-FACTOR
15	2	2	18.18	RADIATIVE LIFETIMES

INSPEC controlled terminology adds specificity to search results

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Explore /CT thesaurus in COMPENDEX

```
=> E TUNGSTEN COMPOUNDS/CT

E#    FREQUENCY     AT TLANG    TERM
--    ---------     -- -----    ----
E1            1                TUNGSTEN COBALT ALLOYS:WEAR RESISTING/CT
E2            1                TUNGSTEN COBALT CARBON ALLOYS/CT
E3        33683     24  EN --> TUNGSTEN COMPOUNDS/CT
E4            1                TUNGSTEN COMPOUNDS:ACTIVITY/CT
E5            1                TUNGSTEN COMPOUNDS:ADHESION/CT
E6            3                TUNGSTEN COMPOUNDS:ADSORPTION/CT
E7            1                TUNGSTEN COMPOUNDS:ALKYLATION/CT
E8            1                TUNGSTEN COMPOUNDS:ALLOYING/CT
E9            8                TUNGSTEN COMPOUNDS:AMORPHOUS/CT
E10           2                TUNGSTEN COMPOUNDS:ANALYSIS/CT
E11           1                TUNGSTEN COMPOUNDS:ANISOTROPY/CT
E12          23                TUNGSTEN COMPOUNDS:APPLICATIONS/CT
```


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Use Relationship Codes to expand into hierarchy

```
=> E E3+ALL

E1       50257    BT3  EN Materials/CT
E2           1         DE Werkstoffe/CT
E3       22736     BT2  EN Refractory materials/CT
E4           0          DE feuerfeste Stoffe/CT
E5       10782   BT4  EN Chemical compounds/CT
E6           0        DE chemische Verbindungen/CT
E7       24819    BT3  EN Metallic compounds/CT
E8           0         DE Metallverbindungen/CT
E9       13524     BT2  EN Transition metal compounds/CT
E10          0          DE Uebergangsmetallverbindungen/CT
E11       3250      BT1  EN Refractory metal compounds/CT
E12          0           DE hochschmelzende Metallverbindungen/CT
E13      33683       -->  EN Tungsten compounds/CT
E14          0           DE Wolframverbindungen/CT
```

HELP RCODES gives more information about available relationship codes in a specific database.

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Classification Codes in COMPENDEX

```
=> E 804.1/CC

E1            1     804./CC
E2            1     804. 804./CC
E3      2483905 --> 804.1/CC
E4      2481790     804.1 ORGANIC COMPOUNDS/CC
E5      2045434     804.2/CC
E6      2043640     804.2 INORGANIC COMPOUNDS/CC
E7        27531     805/CC
E8        27505     805 CHEMICAL ENGINEERING, GENERAL/CC
E9        18496     805.1/CC
E10       18465     805.1 CHEMICAL ENGINEERING/CC
E11       42147     805.1.1/CC
E12       41909     805.1.1 BIOCHEMICAL ENGINEERING/CC
```


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Remove duplicates

```
=> SET DUPORDER FILE

SET COMMAND COMPLETED

=> DUP REM L5 L3 L7 L6


PROCESSING COMPLETED FOR L5
PROCESSING COMPLETED FOR L3
PROCESSING COMPLETED FOR L7
PROCESSING COMPLETED FOR L6
L12         1143 DUP REM L5 L3 L7 L6 (411 DUPLICATES REMOVED)
                 ANSWERS '1-584' FROM FILE COMPENDEX
                 ANSWERS '585-1046' FROM FILE INSPEC
                 ANSWERS '1047-1080' FROM FILE TEMA
                 ANSWERS '1081-1143' FROM FILE PQSCITECH
```

SET DUPORDER FILE sets the order of preference for retaining documents based on the order the databases are entered in the command line

411 Duplicates are removed, and the number of results from each file is shown.

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KWIC shows search terms and surrounding info for context

```
=> D 1 11 20 23 KWIC


L18    ANSWER 1 OF 25 COMPENDEX COPYRIGHT 2024 EEI on STN. DUPLICATE 1
AB     .  .  .  BIC state. We show and experimentally validate a strategy to
       dramatically improve the state-of-the-art on both points, by embedding a
       tungsten disulfide (WS2) monolayer deep within a Bloch-surface-wave
       stack, where the photonic mode is moulded by a 1D photonic crystal
       with a compound periodicity. In particular, we introduce a deterministic
       placement principle to the design of the PhC, allowing to.  .  .

L18    ANSWER 11 OF 25 INSPEC COPYRIGHT 2024 IET on STN.
AB     .  .  .  challenging at room temperature. Here we show strong
       light-matter interaction enhancement and large exciton-polariton
       nonlinearities at room temperature by coupling monolayer tungsten
       disulfide excitons to a topologically protected bound state in the
       continuum moulded by a one-dimensional photonic crystal, and
       optimizing for the electric-field strength at the monolayer position
```


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Full bibliographic records are available

L18 ANSWER 20 OF 25 TEMA COPYRIGHT 2024 WTI-FRANKFURT-DIGITAL GMBH on STN.
DUPLICATE 3
AN 20200278459 TEMA Full-text
DN 20200905028
TI Enhanced directional emission of **monolayer** **tungsten** disulfide (WS2) with robust linear polarization via one-dimensional **photonic** **crystal** (PhC) slab
AU Li, Han; Wang, Jiajun; Ma, Yating; Chu, Jiao; Cheng, Xiangai; Shi, Lei; Jiang, Tian
CS National University of Defense Technology, Changsha, CN; State Key Laboratory of Surface Physics, Fudan University, Shanghai, CN
SO Nanophotonics (2020), Volume 9, Number 14, pp. 4337-4345, 9 Seiten, 5 Bilder, 46 Quellen
ISSN: 2192-8606 E-ISSN: 2192-8614
DOI: https://dx.doi.org/10.1515/nanoph-2020-0294
DT Journal
LA English

Full bibliographic records are available

L18 ANSWER 23 OF 25 PQSCITECH COPYRIGHT 2024 ProQuest LCC on STN.
AN 2022:47955 PQSCITECH Full-text
DN 2627807713
TI Optical Mode Tuning of **Monolayer** **Tungsten** Diselenide (WSe2) by Integrating with One-Dimensional **Photonic** **Crystal** through Exciton-**Photon** Coupling
AU Konthoujam James Singh; Hao-Hsuan Ciou; Ya-Hui, Chang ; Yen-Shou, Lin ; Hsiang-Ting, Lin ; Po-Cheng, Tsai ; Shih-Yen, Lin ; Min-Hsiung Shih; Min-Hsiung Shih; Hao-Chung, Kuo ; Hao-Chung, Kuo
SO Nanomaterials, Vol. 12, No. 3, 20220101 E-ISSN: 2079-4991
DOI: https://doi.org/10.3390/nano12030425
Published by: MDPI AG, Basel
DT Journal; Article
LA English
ED Entered STN: 22 Feb 2022
Last updated on STN: 27 Dec 2023

Links to full-text articles available (depends on your institution's access policies)

Both free and fee-based retrieval options are available

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Deterministic placement and effective-mass pinning of topological polariton bound states in the continuum

By: Maggiolini E. (1,2,3)

Journal of Physics: Conference Series; Journal of Physics: Conference Series (2024), Volume 2725, Number 1, arn: 012005, 9 refs. ISSN: 1742-6588 E-ISSN: 1742-6596 DOI: https://doi.org/10.1088/1742-6596/2725/1/012005 Published by: Institute of Physics Conference: 2023 Conference on Research and Innovations in Science and Technology of Material, CRISTMAS 2023, Paris, France, 13 Dec 2023 - 15 Dec 2023 URL (Document): http://iopscience.iop.org/journal/1742-6596

Web-based document resources

https://doi.org/10.1088/1742-6596/2725/1/012005

Fee-based document services

Order Document

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Summary

- CAS STNext contains a wealth of engineering-related data, both patents and non-patent literature
- STN Database Clusters are groups of files with a common topic or structure/feature that can be searched simultaneously for efficient multifile retrieval
- The ENGINEERING and MATERIALS clusters are highly relevant for engineering searches
- INDEX searching allows you to preview a group of databases to see which files have results from a search query
- CAS STNext allows you to search multiple database producers in a single platform and remove duplicate records

For more information…

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