

## PQSCITECH (ProQuest Science & Technology)

PQSCITECH is a merge of the former CSA files: **AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER.**

### Subject Coverage

- Aerospace engineering
- AIDS & cancer research
- Agrology
- Amino acids, peptides & proteins
- Animal behaviour
- Automotive engineering
- Bacteriology
- Bioengineering
- Biological membranes
- Biotechnology (agricultural, medical, environmental, marine & pharmaceutical)
- Business and industry news
- Calcium & calcified tissue
- Chemoreception
- Civil engineering
- Computers and information systems
- Condensed matter physics
- Earthquake engineering
- Ecology
- Electronics and communication
- Entomology
- Environmental engineering
- Forensic engineering
- Genetics (plant, animal, & human)
- Health & safety science
- Human genome research
- Human population & natural resource management
- Immunology
- Management issues
- Mechanical engineering
- Metallurgy and materials science
- Microbiology
- Molecular biology
- Mycology
- Neurosciences
- Nucleic acids
- Oncogenes & growth factors
- Protozoology
- Risk assessment
- Toxicology
- Virology
- Zoology

### File Type

Bibliographic

### Features

Thesaurus	None			
<a href="#">Alerts (SDIs)</a>	Monthly			
CAS Registry Number <sup>®</sup> Identifiers	<input type="checkbox"/>	Page Images	<input type="checkbox"/>	STN <sup>®</sup> AnaVist <sup>™</sup> <input type="checkbox"/>
<a href="#">Keep &amp; Share</a>	<input checked="" type="checkbox"/>	<a href="#">SLART</a>	<input checked="" type="checkbox"/>	STN Easy <sup>®</sup> <input type="checkbox"/>
Learning Database	<input type="checkbox"/>	Structures	<input type="checkbox"/>	

### Record Content

Bibliographic information, indexing, and abstracts

### File Size

More than 32 million records (07/2017)

### Coverage

1962-present

### Updates

Monthly

### Language

English

**Database Producer** ProQuest LLC  
789 E. Eisenhower Parkway  
P.O. Box 1346  
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USA  
Phone: +1 734 761 4700  
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**Database Supplier** FIZ Karlsruhe  
STN Europe  
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Germany  
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Fax: +49-7247-808-259  
Email: [helpdesk@fiz-karlsruhe.de](mailto:helpdesk@fiz-karlsruhe.de)

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**Sources** Journals, Patents (until 2016), Conferences, Books

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**User Aids**

- Online Helps (HELP DIRECTORY lists all help messages available)
- STNGUIDE

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**Clusters**

- AEROTECH
- AGRICULTURE
- ALLBIB
- AUTHORS
- BIOSCIENCE
- BUSINESS
- CHEMENG
- CHEMISTRY
- COMPANIES
- COMPUTER
- CONSTRUCTION
- COPRSOURCE
- ELECTRICAL
- ENVIRONMENT
- FUELS
- GEOSCIENCE
- HEALTH
- HPATENTS
- HUMANITIES
- MATERIALS
- MEDICINE
- MEETINGS
- METALS
- MOBILITY
- PATENTS
- PHARMACOLOGY
- PHYSICS
- POLYMERS
- RFTOOLS
- SAFETY
- TOXICOLOGY

[STN Database Clusters](#) Information

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**Pricing** Enter HELP COST at an arrow prompt.

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## 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 the abstract (AB), controlled term (CT), title (TI) and uncontrolled terms (UT) fields)	None or /BI	S INDUSTRIAL MEASUREMENT S MANAGEMENT(L)TEAM S ?SPECTRA?	AB, CT, TI, UT
Abstract*	/AB	S MULTISENSOR/AB	AB
Accession Number	/AN	S 2004000021/AN	AN
Alloy Indexing Term (6)	/ALI	S ALUSTAR/ALI	ALI
Author (includes inventor)	/AU	S MAN, ?/AU S MAN C S/AU	AU
Availability (1,7)	/AV	S BRITISH LIBRARY	AV
Classification Code (2,6)	/CC	S AIRCRAFT COMMUNICATIONS/CC	CC
Classification Code Alloy	/CCA	S MANGANESE STEELS/CCA	CCA
Corporate Source (incl. author's affiliation) (2,6)	/CS	S MANCHESTER AIRPORT/CS	CS
Controlled Term	/CT	S ANAEROBIC DIGESTION/CT	CT
Controlled Word	/CW	S MANGANESE/CW	CT
Digital Object Identifier	/FTDOI	S LO.2514/1.46731/FTDOI	FTDOI, SO
Document Number	/DN	S 100014/DN	DN
Document Type (code and text)	/DT (or /TC)	S CONFERENCE ARTICLE/DT S CA/DT	DT
Entry Date (3)	/ED	S ED>28 JUL 2012	ED
E-mail Address (2,6)	/EML	S MANEY@MANEY.CO.UK/EML	EML, SO
Field Availability	/FA	S AB/FA	FA
File Segment	/FS	S AH/FS AND L1 S METADEX?/FS AND L2	FS
International Standard (Document) Number (ISBN and ISSN)	/ISN	S 0945-0084/ISN	ISN, SO
Inventor (6)	/IN	S NELSON ADAM/IN	IN
Journal Title	/JT	S ARCHITECTURAL DESIGN/JT	JT, SO
Language (ISO code and text)	/LA	S L1 NOT ENGLISH/LA	LA
Meeting Date (3,4,6)	/MD	S MD=JAN 2012	MD, SO
Meeting Location (2,4,6)	/ML	S AACHEN/ML	ML, SO
Meeting Organization (2,4,6)	/MO	S BIOCHEMICAL SOCIETY/MO	MO, SO
Meeting Title (includes meeting date and location) (6)	/MT	S MICROOPTICS CONFERENCE/MT	MT, SO
Meeting Year (3,4,6)	/MY	S MY=2010	MY, SO
Note (6)	/NTE	S PAPER PRESENTED/NTE	NTE
Number of Report (6)	/NR	S 1251/NR	NR
Patent Assignee (2,6)	/PA	S BASF/PA	PA
Patent Country (5,6)	/PC	S US/PC	PI
Patent Number (5,6)	/PN	S US239/PN	PI
Physical Properties	/PHP	S DEN/PHP (5A) PLATINUM	AB, TI
Publication Date (3)	/PD	S JAN 2001-MAY 2001/PD	PD, SO
Publication Year (3)	/PY	S PY>=1999	PY, SO
Publisher	/PB	S DOBBS/PB	PB, SO
Publisher Item Identifier	/PUI	S SNDE1743/PUI	PUI

## Search and Display Field Codes (cont'd)

Search Field Name	Search Code	Search Examples	Display Codes
Reference Count <b>(3,6)</b>	/REC (or /RE.CNT)	S REC=5	REC, SO
Source (contains journal titles, other higher level titles, publisher and place of publication, meeting information collation information (volume, issue, pages), ISSN, ISBN, patent and application information, reference count, and publication year, URL and email addresses) <b>(6)</b>	/SO	S FOUNDRYMAN/SO AND 1999/SO S ELSEVIER/SO S MATERIALS/SO AND 230/SO S ICPJ 2012/SO S EUROPEAN PATENT/SO S EP00325S1/SO	SO
Summary Language (ISO code and text) <b>(6)</b>	/SL	S DA/SL	SL
Title*	/TI	S GAS NITRIDING/TI	TI
Update Date <b>(3)</b>	/UP	S UP>JULY 2012	ED
Uniform Resource Locator <b>(2)</b>	/URL	S CAMBRIDGE/URL	URL, SO
Word Count, Title <b>(3)</b>	/WC.T	S WC.T<10 AND L1	WC.T

(1) Field available for file segment LISA only.

(2) Search with implied (S) proximity is available in this field.

(3) Numeric search field that may be searched using numeric operators or ranges.

(4) Field available for file segment CPI only.

(5) Patent Numbers are standardized for CA, GB, and US patents.

(6) Field available until 2016.

(7) Field available until 2015.

## Property Fields<sup>1)</sup>

In PQSCITECH a numeric search for a specific set of physical properties (/PHP) is available within the title and abstract fields. The numeric values are not displayed as single fields, but highlighted within the hit displays.

Use EXPAND/PHP to search for all available physical properties. A search with the respective field codes will be carried out in the abstract and title fields. The /PHP index contains a complete list of codes and related text for all physical properties available for numeric search.

Field Code	Property	Unit	Symbol	Search Examples
/AOS	Amount of substance	Mol	mol	S 10 /AOS
/BIR	Bit Rate	Bit/Second	bit/s	S 330/BIR
/BIT	Stored Information	Bit	Bit	S BIT > 3 MEGABIT
/CAP	Capacitance	Farad	F	S 1-10 MF/CAP
/CDN	Current Density	Ampere/Square Meter	A/m <sup>2</sup>	S CDN>10 A/M**2
/CMOL	Molarity, Molar Concentration	Mol/Liter	mol/L	S UREA/BI (S) 2/CMOL
/CON	Conductance	Siemens	S	S 1S-3/CON
/DB	Decibel	Decibel	dB	S DB>50
/DEG	Degree	Degree	°	S CYLINDER/BI (S) 45/DEG
/DEN	Density (Mass Concentration)	Kilogram/Cubic Meter	kg/m <sup>3</sup>	S 5E-3-10E-3/DEN
/DEQ	Dose Equivalent	Sievert	Sv	S 2/DEQ
/DOS	Dosage	Milligram/Kilogram	mg/kg	S DOS>0.8
/DV	Viscosity, dynamic	Pascal * Second	Pa * s	S DV>5000
/ECD	Electric Charge Density	Coulomb/Square Meter	C/m <sup>2</sup>	S 10E-6 - 10E-5 C/M**2 /ECD
/ECH	Electric Charge	Coulomb	C	S 2-3/ECH
/ECO	Electrical Conductivity	Siemens/Meter	S/m	S ECO>800 S/M

Property Fields<sup>1)</sup> (cont'd)

Field Code	Property	Unit	Symbol	Search Examples
/ELC	Electric Current	Ampere	A	S 1-10/ELC
/ELF	Electric Field	Volt/Meter	V/m	S 650-700/ELF
/ENE	Energy	Joule	J	S SEMICONDUCT?(10A) 20-30 /ENE
/ERE	Electrical Resistivity	Ohm * Meter	Ohm * m	S ERE>2
/FOR	Force	Newton	N	S 50 N /FOR
/FRE	Frequency	Hertz	Hz	S OSCILLAT?/BI (S) 1- 3/FRE
/IU	International Unit	none	IU	S IU>1000 (P) ANTIBIOTIC
/KV	Viscosity, kinematic	Square Meter/Second	m <sup>2</sup> /s	S SILICON?/BI (5A) 10E-5 M**2/S /KV
/LEN (or /SIZ)	Length, Size	Meter	m	S 1-4/LEN
/LUME	Luminous Emittance, Illuminance	Lux	lx	S 10-50/LUME
/LUMF	Luminous Flux	Lumen	Lm	S LUMF>1000
/LUMI	Luminous Intensity	Candela	cd	S LUMI<4
/M	Mass	Kilogram	kg	S ALLOY/BI (30A) 1E-10-1E-5/M
/MCH	Mass to Charge Ratio	none	m/z	S MCH=100
/MFD (or /MFS)	Magnetic Flux Density	Tesla	T	S MFD>102
/MFR (or /MFL)	Mass Flow Rate	Kilogram/Second	kg/s	S MFR<0.1
/MM	Molar Mass	Gram/Mol	g/mol	S 2000-3000 G/MOL/MM
/MOLS	Molality of Substance	Mol/Kilogram	mol/kg	S 01.-10 MOL/KG/MOLS
/MVR	Melt Volume Rate	none	g/10 min	S 3/MVR
/NUC	Nutrition Content	none	g/100*kcal	S NUC<100(XW)CARBOHYDRATE
/PER	Percent (Proportionality)	none	%	S POLYMER?/AB (5A) 4/PER
/PERA	Permittivity, Absolute	Farad/Meter	F/m	S DIELECTRIC/BI (S) 4- 4.1/PERA
/PHV	pH Value	pH	pH	S 7.4-7.6/PHV
/POW	Power	Watt	W	S LIGHT/BI (S) ENERGY/BI (S) 350 WATT/POW
/PRES (or /P)	Pressure	Pascal	Pa	S (VACUUM (5A) DISTILL?)/BI (S) 1000-1100/PRES
/RAD	Radioactivity	Becquerel	Bq	S 10e-10-10e11/RAD
/RES	Electrical Resistance	Ohm	Ohm	S SENSOR/BI (S) 10- 100/RES
/RSP	Rotational Speed	Revolution/Minute	rpm	S 2-100/RSP (S) MACHINE/AB
/SAR	Area /Surface Area	Square Meter	m <sup>2</sup>	S (COATING? OR FOIL?)/BI (S) 10- 100/SAR
/SOL	Solubility	Gram/100 gram	g/100 g	S SOL>20 (10W) WATER
/STSC	Surface Tension	Joule /Square Meter	J/m <sup>2</sup>	S 60 J/M**2/STSC
/TCO	Thermal Conductivity	Watt/Meter * Kelvin	W/m * K	S 1/TCO (S) HEAT?
/TEMP (or /T)	Temperature	Kelvin	K	S (REACTION? (10A) ENZYM?) (S) 5/TEMP
/TIM	Time	Second	s	S ?INCUB?/BI (10A) 10-50/TIM
/VEL (or /V)	Velocity	Meter per Second	m/s	S REDUC?/BI (S) 1E-3-5E-3/VEL
/VELA	Velocity, angular	Radian/Second	rad/s	S VELA>10
/VLR	Volumetric Flow Rate	Cubic Meter/Second	m <sup>3</sup> /s	S 1-2/VLR
/VOL	Volume	Cubic Meter	m <sup>3</sup>	S 1E-8-2E-8/VOL.EX
/VOLT	Voltage	Volt	V	S POTENTIAL/BI (10A) 5E-3 V <VOLT<7E-3 V

(1) Exponential format is recommended for the search of particularly high or low values, e.g. 1.8E+7 or 1.8E7 (for 18000000) and 9.2E-8 (for 0.000000092).

## 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
ALI (5)	Alloy Indexing Term	D ALI
AN	Accession Number	D 1-5 AN
AU	Author	D AU TI
AV (1,6)	Availability	D AV
CC (5)	Classification Code	D CC
CCA (5)	Classification Code Alloy	D CCA
CS (5)	Corporate Source	D CS
CT	Controlled Term	D CT
DN	Document Number	D DN
DT (TC)	Document Type	D DT
ED	Entry Date	D ED
EML (2,5)	E-mail Address	D EML
FA	Field Availability	D FA
FTDOI (2)	Digital Object Identifier	D FTDOI
IN (5)	Inventor	D IN
ISN (2)	International Standard (Document) Number	D ISN
JT (2)	Journal Title	D JT
LA	Language	D LA TI
MD (2,3,5)	Meeting Date	D MD
ML (2,3,5)	Meeting Location Title	D ML
MO (2,3,5)	Meeting Organizer	D MO
MT (2,5)	Meeting Title	D MT
MY (2,3,5)	Meeting Year	D MY
NR	Number of Report	D NR
NTE	Note	D NTE
PA (5)	Patent Assignee	D PA
PB (2)	Publisher	D PB
PD (2)	Publication Date	D PD
PI (PN) (5)	Patent Information	D PI
PUI	Publisher Item Identifier	D PUI
PY (2)	Publication Year	D PY
REC (RE.CNT) (2)	Reference Count	D REC
SL (5)	Summary Language	D SL
SO	Source	D SO
TI	Title	D TI 1-3
UP (2)	Update Date	D UP
URL (2)	Uniform Resource Locator	D URL
UT	Uncontrolled Term	D UT
WC.T (2)	Word Count, Title	D WC.T
ABS	AN, AB	D ABS
ALL	AN, DN, TI, AU, IN, CS, PA, PI, NR, SO, NTE, PUI, DT, FS, LA, SL, AV, ED, AB, CC, CT, UT, ALI, CCA	D 1-3 ALL
DALL	ALL, with delimiter for post processing	D DALL
IALL	ALL, indented with text labels	D IALL
BIB	AN, DN, TI, AU, IN, CS, PA, PI, NR, SO, NTE, PUI, DT, FS, LA, SL, AV, ED (BIB is the default)	D 8 BIB
IBIB	BIB, indented with text labels	D IBIB
IND	AN, CC, CT, ALI, CCA, UT	D IND
SCAN (4)	TI, CC, CT (random display without answer numbers)	D SCAN
TRIAL (TRI, SAM, SAMPLE, FREE)	AN, TI, CC, CT, ALI, CCA, UT	D TRI

**DISPLAY and PRINT Formats (cont'd)**

Format	Content	Examples
HIT KWIC OCC	Hit term(s) and field(s) Up to 50 words before and after hit term(s) (KeyWord-In-Context) Number of occurrences of hit term(s) and field(s) in which they occur	D HIT D KWIC D OCC

- (1) Field available for file segment LISA only.  
(2) Custom display only.  
(3) Field available for file segment CPI only.  
(4) SCAN must be specified on the command line, i.e., D SCAN or DISPLAY SCAN.  
(5) Field available until 2016.  
(6) Field available until 2015.

**SELECT, ANALYZE, and SORT Fields**

The SELECT command is used to create E-numbers containing terms taken from the specified field in an answer set.

The ANALYZE command is used to create an L-number containing terms taken from the specified field in an answer set.

The SORT command is used to rearrange the search results in either alphabetic or numeric order of the specified field(s).

Field Name	Field Code	ANALYZE/ SELECT (1)	SORT
Abstract	AB	Y	N
Alloy Indexing Term (6)	ALI	Y	Y
Accession Number	AN	Y	Y
Author	AU	Y	Y
Citation	CIT (RE)	Y (2,3)	N
Classification Code (6)	CC	Y	Y
Classification Code Alloy (6)	CCA	Y	Y
Controlled Term	CT	Y	Y
Corporate Source (6)	CS	Y	Y
Digital Object Identifier	FTDOI	N	Y
Document Number	DN	Y	Y
Document Type	DT (TC)	Y	Y
E-mail Address (6)	EML	Y	Y
Entry Date	ED	Y	Y
Field Availability	FA	Y	N
Inventor (6)	IN	Y	Y
International Standard (Document) Number	ISN	Y (4)	Y
International Standard Book Number	ISBN	N	Y
International Standard Serial Number	ISSN	N	Y
Journal Title	JT	Y	Y
Language	LA	Y	Y
Meeting Date (6)	MD	Y	Y
Meeting Location (6)	ML	Y	Y
Meeting Organizer (6)	MO	Y	Y
Meeting Title (6)	MT	Y	Y
Meeting Year (6)	MY	Y	Y
Note (6)	NTE	Y	Y
Number of Report (6)	NR	Y	Y
Occurrence Count of Hit Terms	OCC	N	Y
Patent Assignee (6)	PA	Y	Y
Patent Country (6)	PC	Y	Y
Patent Number (6)	PN (PI)	Y	Y
Publication Date	PD	Y	Y
Publication Year	PY	Y	Y
Publisher	PB	Y	Y
Publisher Item Identifier	PUI	Y	Y

**SELECT, ANALYZE, and SORT Fields (cont'd)**

Field Name	Field Code	ANALYZE/ SELECT (1)	SORT
Reference Count (6)	REC (RE.CNT)	Y	Y
Source	SO	Y (5)	Y
Summary Language (6)	SL	Y	Y
Title	TI	Y (default)	Y
Uncontrolled Term	UT	Y	Y
Uniform Resource Locator	URL	Y	Y
Update Date	UP	Y	Y
Word Count, Title	WC.T	Y	Y

- (1) HIT may be used to restrict terms extracted to terms that match the search expression used to create the answer set, e.g., SEL HIT TI.
- (2) SELECT or ANALYZE HIT are not valid with this field.
- (3) SELECT or ANALYZE CIT allows you to extract the reference from the source documents in this file and have them automatically converted to a citation format for searching in the SCISEARCH file. SEL or ANALYZE CIT extracts first author, publication year, volume, first page, with a truncation symbol and with /RE appended to the terms created by SELECT.
- (4) Selects or analyzes ISSN and ISBN with /ISN appended to the terms created by SELECT.
- (5) Selects or analyzes ISSN and ISBN with /SO appended to the terms created by SELECT.
- (6) Field available until 2016.

**Sample Records****DISPLAY ALL OF PATENT**

```

AN      2012:265427    PQSCITECH
DN      16501995
TI      Method of triggering a transfer of data stored in a database
IN      Degraeve, Michel
PA      Mobile2Web (US) S.A. (Luxembourg, LU)
PI      US 43284          20120327
SO      Application Information: 13/019,894, 2 Feb. 2011
DT      Patent
FS      Mechanical & Transportation Engineering Abstracts (MT); METADEX (MD);
        ANTE: Abstracts in New Technologies and Engineering (AN); Aerospace &
        High Technology Database (AH)
LA      English
ED      Entered STN: 11 Jun 2012
        Last updated on STN: 11 Jun 2012
AB      A method of sending data stored in a database from a sender to a
        recipient, which are mobile phone users, in relationship with a manager
        that defines a managing software application, wherein database and the
        manager are in connection with a website, involves entering into a
        connection between the sender and the manager. The sender enters into
        the connection with the manager and provides sender identification to
        the manager. Further, the method involves transferring an identifier to
        the manager, wherein the sender transfers the identifier that comprises
        at least a recipient's mobile phone number. Further, the method involves
        associating an e-mail address or a URL address with the identifier by
        the manager.
CC      61 Design Principles (MT); 71 General and Nonclassified (MD); Yes (AN);
        99 General (AH)
CT      Cell phones; Databases; Electronic mail; Joints; Software

```



**DISPLAY IBIB OF JOURNAL**

ACCESSION NUMBER: 2012:244916 PQSCITECH  
DOCUMENT NUMBER: 16086305  
TITLE: Comparison of performance and combustion parameters in a heavy-duty diesel engine fueled with iso-butanol/diesel fuel blends  
AUTHOR(S): Ozsezen, Ahmet Necati; Turkcan, Ali; Sayin, Cenk; Canakci, Mustafa  
CORPORATE SOURCE: Department of Automotive Engineering Technology, Kocaeli University, Izmit 41380, Turkey  
SOURCE: Energy Exploration & Exploitation [Energy Explor. Exploit.]. Vol. 29, no. 5, pp. 525-541. Oct 2011. ISSN: 0144-5987  
DOI: 10.1260/0144-5987.29.5.525  
Published by: Multi-Science Publishing Co. Ltd., 5 Wates Way Brentwood Essex CM15 9TB United Kingdom  
URL (Document): <http://multi-science.metapress.com/link.asp?target=contributi on&id=H3475114LU446520>  
PUBL. ITEM IDENTIFIER: H3475114LU446520  
DOCUMENT TYPE: Journal; Article  
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts (MT); Environmental Engineering Abstracts (EN); Electronics and Communications Abstracts (EA); CSA / ASCE Civil Engineering Abstracts (CE)  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
ENTRY DATE: Entered STN: 11 Jun 2012  
Last updated on STN: 11 Jun 2012

**DISPLAY ALL OF BOOK**

AN 2012:180886 PQSCITECH  
DN 13451814  
TI Mixing in Stratified Parallel flows and Implications for Mixing Efficiency  
AU Mashayek, A; Peltier, W R  
CS Physics, University of Toronto, Toronto, Ontario, ON, Canada  
EMAIL: amashaye@atmosp.physics.utoronto.ca  
SO Proceedings from the 2010 AGU Ocean Sciences Meeting. [np]. 22-26 Feb 2010.  
Published by: American Geophysical Union, 2000 Florida Ave., N.W. Washington DC 20009 USA, [URL:<http://www.agu.org>]  
Conference: 2010 Ocean Sciences Meeting, Portland, OR (USA), 22-26 Feb 2010  
NTE Abstracts Available  
DT Conference; Book; Short Communication  
FS Oceanic Abstracts; ASFA 2: Ocean Technology Policy & Non-Living Resources  
LA English  
ED Entered STN: 11 Jun 2012  
Last updated on STN: 11 Jun 2012  
AB The focus of our study is on the efficiency of the mixing process in stratified shear layers. Certain areas of the oceans including the equatorial Pacific are known to be largely subjected to shear mixing. We investigate the transition process through which a two dimensional KelvinHelmholtz (KH) instability becomes turbulent. KH billows are known to undergo merging processes. The braid region of the primary KH wave is also susceptible to a secondary shear instability which can happen before, during, or after the merging process. The KH billows are also known to be susceptible to three dimensional convective instabilities occurring in the outer regions of their billows in which isopycnals overturn which provides a fast route to turbulent collapse. Occurrence of the latter instability may eliminate the possibility of the merging

and secondary shear instabilities by quickly destroying the laminar structure of the two dimensional billow dominated flow. We investigate the possibility of occurrence of these three instabilities in the Reynolds and Prandtl (Re-Pr) number space using a theoretical approach. A map is provided which determines the dominant instability in different zones of Re-Pr space and identifies the regions of possible coexistence of multiple instabilities. The map is developed on a theoretical basis and is tested against high resolution two and three dimensional direct numerical simulations (DNS). As each of the instabilities have their specific implications on the mixing efficiency, the map allows identification of the appropriate value for the mixing efficiency based on the ambient physical properties of the flow. It also enables a prediction to be made on a priori grounds of the structures that will characterize the turbulent flow once transition has occurred.

CC Q2 02284 Hydrodynamics, wave, current and ice forces; O 2010 Physical Oceanography

CT Billows; Mixing processes; Overturn; Physical properties; Turbulent flow

**In North America**

CAS  
STN North America  
P.O. Box 3012  
Columbus, Ohio 43210-0012 U.S.A.

CAS Customer Center:  
Phone: 800-753-4227 (North America)  
614-447-3700 (worldwide)  
Fax: 614-447-3751  
Email: [help@cas.org](mailto:help@cas.org)  
Internet: [www.cas.org](http://www.cas.org)

**In Europe**

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Germany  
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Fax: +49-7247-808-259  
Email: [helpdesk@fiz-karlsruhe.de](mailto:helpdesk@fiz-karlsruhe.de)  
Internet: [www.stn-international.com](http://www.stn-international.com)

**In Japan**

JAICI (Japan Association for  
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