



STN is operated in North America  
by Chemical Abstracts Service.

## STN Database Summary Sheet

**LINSPEC** is a training database for learning how to use the INSPEC database. INSPEC, The Database for Physics, Electronics and Computing, is a bibliographic database providing access to the worldwide literature on physics, electrical engineering and electronics, control theory and technology, computers and computing.

INSPEC corresponds to Physics Abstracts, Electrical & Electronics Abstracts, and Computer & Control Abstracts.

Citations, with abstracts, are in English. Bibliographic information, indexing terms, abstracts, property information, and element terms are all searchable.

A Physical Properties (/PHP) thesaurus and the INSPEC (/CT) thesaurus are available online.

LINSPEC contains the SELECT CIT feature, which allows you to extract the reference data from the source documents in this file and have them automatically converted to a citation format for searching in the SciSearch File.

### Subject Coverage

- Atomic and Molecular Physics
- Circuit Theory and Circuits
- Classical Areas of Phenomenology
- Communications
- Components, Electronic Devices, and Materials
- Computer Applications
- Computer Hardware and Software
- Condensed Matter: Structure, Mechanical and Thermal Properties, Electronic Structures, Electrical, Magnetic, and Optical Properties
- Control Technology
- Cross-Disciplinary Physics and Related Areas of Science and Technology
- Electromagnetic Fields
- Engineering Mathematics, Materials Science
- Fluids, Plasma, Electric Discharges
- General and Management Aspects and Applications
- Geophysics, Astronomy, Astrophysics
- Information Technology
- Instrumentation and Special Applications
- Magnetic and Superconducting Materials and Devices
- Nuclear Physics
- Numerical Analysis and Theoretical Computer Topics
- Office Automation - Communications, Computing
- Optical Materials and Applications, Electro-Optics and Optoelectronics
- Physics of Elementary Particles and Fields
- Power Systems and Applications
- System and Control Theory

### Sources

- About 4,000 journals (82%)
- Books
- Dissertations
- Reports
- 21% of all citations are conference contributions

### File Data

- 100,000 records (8/06)
- The number of records is static

### User Aids

- INSPEC Database Description
- STN Mentor Laboratory: INSPECLab
- List of Journals and other Serial Sources (available from the producer)
- User Manual (by IEE)
- Thesaurus (online and printed)
- Classification
- STNGUIDE

### Database Producer

The Institution of Engineering and Technology (IET)  
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#### In North America

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

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

#### In Europe

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STN Europe  
P.O. Box 2465  
76012 Karlsruhe  
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Internet: [www.stn-international.de](http://www.stn-international.de)

#### In Japan

JAICI (Japan Association for International Chemical Information)  
STN Japan  
Nakai Building  
6-25-4 Honkomagome, Bunkyo-ku  
Tokyo 113-0021, Japan  
Phone: +81-3-5978-3601 (Technical Service)  
+81-3-5978-3621 (Customer Service)  
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Internet: [www.jaici.or.jp](http://www.jaici.or.jp)

## LINSPEC

## Search and Display Field Codes

Fields that allow left truncation in this file (/BI, /AB, /TI) are indicated by an asterisk.

Search Field Name	Search Code	Search Examples	Display Codes
Basic Index * (contains single words from the title (TI), abstract (AB), controlled term (CT), and supplementary term (ST) field)	None (or /BI)	S MICROELECTRON? S QUANTUM HALL S LIQUID (A) CRYST? S AL2O3-NA2O	AB, CT, ST, TI
Abstract *	/AB	S MICROSWITCH?/AB	AB
Accession Number	/AN	S 90:3615484/AN	AN
Application Date	/AD	S 19660515/AD	AI
Application Year	/AY	S 1968/AY	AI
Astronomical Object	/AO	S ARP 220/AO S "GRS 1915+105"/AO S SMITH, S G/AU	AO
Author (includes editor, patent inventor)	/AU		AU
Availability	/AV	S 10/AV	AV
Chemical Indexing (1,2)	/CHI (or /MAI)	S BA DOP/CHI S CU SS/CHI S (IN SS(S)GA SS(S)AS SS)CHI S (LA(S)CU(S)O)/CHI(L)ELC=3 S A9110Q/CC S A4/CC S A41/CC S (OPTICAL (S) DEVICE?)/CC S MAGNETIC LEVITATION/CT S MACROMOLEC?/CW S (NAT(W)BUR?(2W)WASH?)/CS S GAIN ELECTRON?/CS	CHI
Classification Code (code and text)	/CC		CC
Controlled Term (3)	/CT		CT
Controlled Word	/CW		CT
Corporate Source (includes affiliation, patent assignee)	/CS		CS, AU
Country of Publication (ISO code and text)	/CY	S NL/CY S AUSTRALIA/CY	CY
Document Number (abstract journal)	/DN	S C83014404/DN	DN
Document Type (code and text)	/DT	S BOOK/DT	DT
Element Count (total) (2,4)	/ELC	S CA/CHI(L)ELC>2	Not displayed
Element Terms (contains chemical elements, formulas, compounds (CP), materials (SY: >= 2 metals), dopings, ions negative (IN), ions positive (IP), isotopes (IS), nuclear reactions (target T, reaction R, final nucleus F))	/ET	S LA2CUO4/ET S CL*XE/ET (5) S LA CP/ET S CU SY 3/ET S SI:H/ET S CA IP 2/ET S PB IS/ET S 6LI R/ET	ET
Entry Date (4)	/ED (or /UP)	S ED>950200	Not displayed
File Segment	/FS	S B/FS AND SAFETY	Not displayed
International Standard (Document) Number	/ISN	S 2 7302 0031 2/ISN	SO, ISN
Journal Title	/JT	S CREATIVE COMPUT?/JT	SO
Language (ISO code and text)	/LA	S GERMAN/LA;S RU/LA	LA
Meeting Date	/MD	S 1983-1984/MY	SO
Meeting Location	/ML	S NEW ORLEANS/ML	ML, SO
Meeting Title	/MT	S HEAT/MT	MT, SO
Meeting Year (4)	/MY	S 1983-1984/MY	SO
Number of Contract	/NC	S 704-79-1-EHI/NC	NC
Number of Report (number and prefix)	/NR	S HPL-92-106/NR S HPL/NR	NR
Patent Assignee	/PA	S AEI/PA	PA

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

Search Field Name	Search Code	Search Examples	Display Codes
Patent Number, Original	/PNO	S US 3427697/PNO	PNO
Periodic Group	/PG	S A8/PG	Not displayed
Physical Properties (6,7)	/PHP	S ELECTRIC CURRENT+ALL/PHP	PHP
Priority Application Number	/PRNO	S DE-B81085/PRNO	PRAO
Priority Date	/PRD	S 19650521/PRD	PRAO
Priority Year	/PRY	S 1968/PRY	PRAO
Publication Year (4)	/PY	S 1980-1982/PY	SO, PI
Publisher	/PB	S SPRINGER/PB	PB, SO
Reference Count	/REF	S 24/REC	REC
Source (contains journal title and other higher level titles, ISBN, ISSN, CODEN, SICI, ThetaRL, collation, publisher, and meeting information)	/SO	S EARTH PLANET/SO S (CREATIVE COMP? (L) USA)/SO S 0031-9201/SO	SO, NC, NR
Supplementary Term (8)	/ST	S AL2O3-NA2O/ST S MEASUR? DEVICE/ST	ST
Title *	/TI	S GRAVITY MODELS/TI	TI
Treatment Code (code and text)	/TC	S GENERAL REVIEW/TC	TC
Uniform Resource Locator	/URL	S JILT/URL	URL
Word Count, Title	/WC.T	S 32/WC.T	WC.T

- (1) Search with or without role indicators; valid for records since 1987. All single elements belonging to one formula, including their role indicators, can be searched separately and combined with (S) proximity. Valid role indicators are found in the Role Indicator table.
- (2) The Total Element Count (/ELC) is linked by (L) proximity to elements in /CHI.
- (3) A thesaurus is available for the Controlled Term (/CT) field.
- (4) Numeric search field that may be searched using numeric operators or ranges.
- (5) Elements cited in Hill System order with an asterisk (\*) between element terms.
- (6) For physical properties, refer to the Property Fields table; valid for records since 1987.
- (7) A thesaurus is available for the Physical Properties (/PHP) field.
- (8) Alloys are indexed as a bound phrase only.

## Properties and Property Parameters

Search Field Name	Default Units	Search Code	Search Examples	Display Code
Age	yr	/AGE	S 2E3/AGE	PHP
Altitude	M	/ALT	S ALT>2.1	PHP
Apparent Power	VA	/POA	S 7E7/POA	PHP
Bandwidth	Hz	/BAW	S 7.4E-1/BAW	PHP
Bit Rate	bit/s	/BIR	S 2100-2400/BIR	PHP
Byte Rate	Byte/s	/BYR	S BYR<400000	PHP
Capacitance	F	/CAP	S 2.2E-04/CAP	PHP
Computer Execution Rate	IPS	/COE	S 85E5/COE	PHP
Computer Speed	FLOPS	/COS	S COS>=151E3	PHP
Conductance	S	/CON	S 0.8/CON	PHP
Current	A	/CUR	S 4.11-4.17/CUR	PHP
Depth	m	/DEP	S 5.33E-3/DEP	PHP
Distance	m	/DIS	S 4.99<8.99	PHP
Efficiency	percent	/EFF	S 20-30/EFF	PHP
Electric Conductivity	S/m	/ECND	S ECND<=7.084	PHP
Electrical Resistivity	ohm*m	/EREST (or /REE)	S 2.0E-2-1.0E5/EREST	PHP
Electron Volt Energy	eV	/EEV	S 8005E-4/EEV	PHP
Energy	J	/ENE	S 4.5/ENE	PHP
Frequency	Hz	/FRE	S 2028E2/FRE	PHP
Gain	dB	/GAI	S 1.0E1-1.5E1/GAI	PHP
Galactic Distance	pc	/GAD	S 3.26/GAD	PHP
Geocentric Distance	m	/GED	S GED<1.3E9	PHP

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## Properties and Property Parameters (cont'd)

Search Field Name	Default Units	Search Code	Search Examples	Display Code
Heliocentric Distance	AU	/HED	S 12.53666/HED	PHP
Loss	dB	/LOS	S 6E-1/LOS	PHP
Magnetic Flux Density	T	/MFD (or /B)	S 0.0E1/MFD	PHP
Mass	kg	/M	S 1/M	PHP
Memory Size	Byte	/MES	S 1000-20000/MES	PHP
Noise Figure	dB	/NOF	S 3.5/NOF	PHP
Picture Size	pixel	/PIS	S 6E3/PIS	PHP
Power	W	/POW	S 17/POW	PHP
Pressure	Pa	/PRES (or /P)	S 2.5E8/PRES	PHP
Radiation Absorbed Dose	Gy	/RADA	S 1.0E0-1.0E2/RADA	PHP
Radiation Dose Equivalent	Sv	/RADE	S RADE>=.01	PHP
Radioactivity	Bq	/RAD	S 2.6E+08/RAD	PHP
Resistance	ohm	/RES	S 5.0E3/RES	PHP
Size	m	/SIZ	S 5/SIZ	PHP
Stellar Mass	Msol	/STM	S .6/STM	PHP
Storage Capacity	bit	/SCA	S 14-20/SCA	PHP
Temperature	K	/TEMP (or /T)	S 2.4-3.2/TEMP	PHP
Time	s	/TIM	S 2.7E+3/TIM	PHP
Velocity	m/s	/VEL (or /V)	S 4.01-4.13/VEL	PHP
Voltage	V	/VOLT	S 3.3E-1/VOLT	PHP
Wavelength	m	/WVL (or /W)	S 6.0-1.3E2/WVL	PHP
Word Length	bit	/WOL	S 1E2-3E3/WOL	PHP

(1) All fields are numeric search fields that may be searched with numeric operators or ranges.

(2) Exponential format is recommended for the search of values, e.g., 1.8E+4 or 1.8E4 (for 18000) and 9.2E-1 (for 0.92).

## Display and Print Formats

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

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

Format	Content	Example
AB	Abstract	D TI AB
AD	Application Date	D AD
AI	Application Information	D AI
AN	Accession Number	D 1-5 AN
AO	Astronomical Object	D AO
AU	Author (Patent Inventor)	D AU TI
AV	Availability	D AV
CC	Classification Code	D CC
CHI	Chemical Indexing	D CHI
CS	Corporate Source (Patent Assignee) (includes AU)	D CS
CT	Controlled Term	D CT
CY	Country of Publication	D CY 1,3
DN	Document Number	D DN
DT	Document Type (includes TC)	D DT
ET	Element Terms	D ET
ISN	International Standard (Document) Number	D ISN
JT	Journal Title	D JT
LA	Language	D LA TI
MD	Meeting Date	D MD
ML	Meeting Location	D ML

## Display and Print Formats (cont'd)

Format	Content	Example
MT MY NC NR PA PB PHP PI PRAI PRAO PY REF SO ST TC TI URL WC.T	Meeting Title Meeting Year Number of Contract Number of Report Patent Assignee Publisher Physical Properties Patent Information Priority Information Priority Application Information Publication Year Reference Count Source (includes NC and NR) Supplementary Term Treatment Code (includes D T) Title Uniform Resource Locator Word Count, Title	D MT D MY D NC D NR D PA D PB D PHP D PI D PRAI D PRAO D PY D REF D SO D CT ST 5 15 D TC D TI 1-10 D URL D WC.T
ALL BIB  DALL IALL IBIB IND TRIAL	BIB, AB, CC, CT, ST, AO, CHI, PHP, ET AN, DN, TI, AU, CS, NC, NR, SO, DT, TC, CY, LA Patents: AN, DN, TI, AU, CS, PI, AD, PRAI, DT, TC, CY, LA (BIB is the default) ALL, delimited for post-processing ALL, indented with text labels BIB, indented with text labels AN, DN, CC, CT, ST, AO, CHI, PHP, ET TI, CC, CT, ST, AO, CHI, PHP, ET	D 1-3 ALL D 8 BIB  D DALL D IALL D IBIB D IND D TRI
HIT KWIC OCC	Fields containing hit terms Hit terms with 20 words on either side (Keyword-In-Context) Fields that contain hit terms and number of times they occur	D HIT D KWIC OCC

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## Thesaurus Fields

There are two different thesauri available online in the LINSPEC database: the INSPEC Thesaurus in the Controlled Term (/CT) field, and the Physical Properties Thesaurus in Physical Properties (/PHP) field. All Relationship Codes can be used with both the SEARCH and EXPAND command in /CT and /PHP unless otherwise indicated.

### /CT Field

Relationship Code	Content	Examples
ALL AUTO (1) BT HIE KT	All Associated Terms Automatic Relationship (SELF, USE, UF) Broader Terms Hierarchy (all Broader and Narrower Terms) Keyword Terms (multiword phrases containing the specified keyword term)	E ALUMINIUM COMPOUNDS+ALL/CT S POWDER SPRAYING+AUTO/CT E TERBIUM ALLOYS+BT/CT E SHOCK WAVES+HIE/CT E POWDER+KT/CT
NOTE (2) NT PFT	Notes Associated with Terms (SELF, DA, CC) Narrower Terms All Preferred and Forbidden Terms, and Dates (SELF, DA, USE, UF)	E ELECTRIC MACHINES+NOTE/CT S ACOUSTIC TRANSDUCERS+NT/CT E POWER AMPLIFIERS+PFT/CT
PT RT STD	Prior Terms Related Terms (see also) Standard (all Broader, Narrower, Related, and Prior Terms)	E DATABASE MANAGEMENT SYSTEMS+PT/CT E TRANSIENT ANALYSERS+RT/CT E TRANSFER FUNCTIONS+STD/CT
UF USE	Used For (Preferred and Forbidden Terms) Use (Forbidden and Preferred Terms)	E TRANSDUCERS+UF/CT E SOLIONS+USE/CT

(1) Automatic relationship is SET OFF. When RELATION is ON the result of EXPAND or SEARCH without any relationship code is the same as described for AUTO.

(2) This Relationship Code can only be used with the EXPAND command.

### /PHP Field

Relationship Code	Content	Examples
ALL NOTE (1)	All Associated Terms Notes Associated with Terms (SELF, INSPEC, CGS, ENG, FPS, MKS, SI, STN, OTHERS, DEF, DA)	E CURRENT+ALL/PHP E ALTITUDE+NOTE/PHP
PFT	All Preferred and Forbidden Terms (SELF, UTP, USE, UF)	E APPARENT POWER+PFT/PHP
UF UNIT (1)	Used For (Preferred and Forbidden Terms) Unit (SELF, FQS, INSPEC, CGS, ENG, FPS, MKS, SI, STN, OTHERS)	E SIZE+UF/PHP E STORAGE CAPACITY+UNIT/PHP
USE	Use (Forbidden and Preferred Terms)	E RADIUS+USE/PHP

(1) This Relationship Code can only be used with the EXPAND command.

## SELECT, ANALYZE, and SORT Fields

The SELECT command is used to create E-numbers or an L-number 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 (2)	N
Accession Number	AN	Y	N
Application Date	AD	N	Y
Application Year	AY	Y	Y
Astronomical Object	AO	Y	Y
Author (Patent Inventor)	AU	Y	Y
Availability	AV	Y	Y
Chemical Indexing	CHI	Y	N
Citation	CIT	Y (3,4)	N
Classification Code	CC	Y	Y
CODEN	CODEN	N	Y
Controlled Term	CT	Y	N
Corporate Source (Patent Assignee)	CS	Y	Y
Country of Publication	CY	Y	Y
Document Number	DN	Y	Y
Document Type	DT	Y	Y
Element Terms	ET	Y	N
International Standard Book Number	ISBN	N	Y
International Standard Serial Number	ISSN	N	Y
Journal Title	JT	Y (3)	Y
Language	LA	Y	Y
Meeting Title	MT	N	Y
Number of Contract	NC	Y	Y
Number of Report	NR	Y	Y
Occurrence of Hit Terms	OCC	N	Y
Patent Information	PI	N	Y
Patent Number, Original	PNO	Y	Y
Priority Country	PRC	Y	Y
Priority Date	PRD	Y	Y
Priority Information	PRAI	N	Y
Priority Year	PRY	Y	Y
Publication Year	PY	Y (3)	Y
Source	SO	Y (5,6)	N
Supplementary Term	ST	Y	N
Title	TI	Y (default)	Y
Treatment Code	TC	Y	Y
Uniform Resource Locator	URL	Y	Y
Word Count, Title	EC.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) Appends /BI to the terms created by SELECT.

(3) SELECT HIT and ANALYZE HIT may not be used with this field.

(4) Extracts first author, publication year, volume, first page, with a truncation symbol appended and with /RE appended to the terms created by SELECT.

(5) Selects or analyzes CODEN, ISSN, and ISBN with /SO appended to the terms created by SELECT.

(6) SELECT HIT and ANALYZE may only be used when the search terms were CODEN or ISSN.

**LINSPEC****Thesaurus Field Descriptors**

Code	Description
SELF	Self Term, Descriptor
CC	Classification Code
CGS	CGS Unit Symbol
DA	Date of Introduction of Descriptor
DEF	Definition
ENG	Engineering Unit Symbol
FPS	FPS Unit Symbol
FQS	Field Qualifier Search
INSPEC	Unit given by INSPEC
MKS	MKS Unit Symbol
OTHERS	Units mentioned in printed version besides those already given
SI	SI Unit Symbol
STN	STN Unit Symbol
UTP	USE: Unit to Property
UF	Allowed Property Name
USE	Forbidden to Allowed Property Name

**Role Indicators**

Terms in the Chemical Indexing (/CHI) may be searched with or without role indicators. They are valid for records since 1987.

All single elements belonging to one formula including their role indicators can be searched separately and combined with (S) proximity, e.g., S (IN SS (S) GA SS (S) AS SS)/CHI.

**Code Content**

ADS	Absorbate, or any sorbate being (ad)sorbed onto a substance
BIN	Binary system
DOP	Dopant
EL	Element
INT	Interface system
SS	System with 3 or more components
SUR	Surface or substrate

## Sample Records

### DISPLAY BIB (Book Article)

AN 96:5211068 LINSPEC DN A9608-6116P-005  
 TI Scanning force microscopy (SFM).  
 AU Meyer, E.; Heinzelmann, H. (Phys. Inst., Bern Univ., Switzerland)  
 SO Scanning tunneling microscopy II. Further applications and related scanning techniques. Second edition  
 Editor(s): Wiesendanger, R.; Guntherodt, H.-J.  
 Berlin, Germany: Springer-Verlag, 1995. p.99-149 of xiv+349 pp. 116 refs.  
 ISBN: 3-540-58589-3  
 DT Book Article  
 TC Experimental  
 CY Germany, Federal Republic of  
 LA English

### DISPLAY ALL (Journal)

AN 95:4870092 LINSPEC DN A9505-9840-004  
 TI Molecular hydrogen and excitation in the HH 1-2 system.  
 AU Noriega-Crespo, A. (Infrared Process. & Anal. Center, California Inst. of Technol., Pasadena, CA, USA); Garnavich, P.M.  
 SO Astronomical Journal (Oct. 1994) vol.108, no.4, p.1432-6, 1521-2. 55 refs.  
 Price: CCCC 0004-6256/94/108(4)/1432/5/\$0.90  
 CODEN: ANJOAA ISSN: 0004-6256  
 DT Journal  
 TC Experimental  
 CY United States  
 LA English  
 AB Presents a series of molecular hydrogen images of the Herbig-Haro 1-2 system in the 1-0 S(1) transition at 2.121  $\mu$ m, with a spatial resolution of approximately 2". The distribution of H<sub>2</sub> is then compared with that of the excitation, given by the (S II) 6717+6731 to H alpha line ratio. The authors find that most optical condensations in the HH 1-2 system, including the VLA 1 jet, have H<sub>2</sub> counterparts. H<sub>2</sub> emission is detected in most low excitation knots, as expected for low velocity shocks (50 km s<sup>-1</sup>), but also in high excitation regions, like in HH 1F and HH 2A'. For these latter objects, the H<sub>2</sub> emission could be due to the interaction of the preionizing flux, produced by 150-200 km s<sup>-1</sup> shocks, with the surrounding interstellar matter, i.e., fluorescence. The lack of fluorescent lines in the UV, however, suggest a different mechanism. H<sub>2</sub> is detected at the tip of the VLA 1 jet, where the knot morphology suggests the presence of a second bow shock. H<sub>2</sub> is detected also SE of HH 2E and SW of HH 1F, in regions with known NH<sub>3</sub> emission. (Plates).  
 CC A9840H H II regions, emission nebulae; A9720D Pre-main-sequence stars; A9840K Reflection nebulae, dark clouds, and molecular clouds; A9840L Star-forming regions; A9580G Infrared astronomical observations; A9580J Photographic region astronomical observations  
 CT ASTRONOMICAL SPECTRA; ASTROPHYSICAL JETS; INFRARED ASTRONOMY; NEBULAE; PRE-MAIN-SEQUENCE STARS  
 ST Herbig Haro object; HH 1; HH 2; IR spectra; chemical composition; emission nebula; visible spectra; excitation; HH 1-2; infrared image; 1-0 S(1) transition; optical condensation; jet; HH 2E; HH 1F; AD 1992; 670 to 675 nm; 2.121  $\mu$ m; H<sub>2</sub>; S  
 AO HH 1; HH 2  
 CHI H<sub>2</sub> el, H el; S el  
 PHP wavelength 6.7E-07 to 6.75E-07 m; wavelength 2.121E-06 m  
 ET H; I\*S; S II; S cp; cp; I cp; H<sub>2</sub>; F; H\*N; NH<sub>3</sub>; N cp; H cp; S