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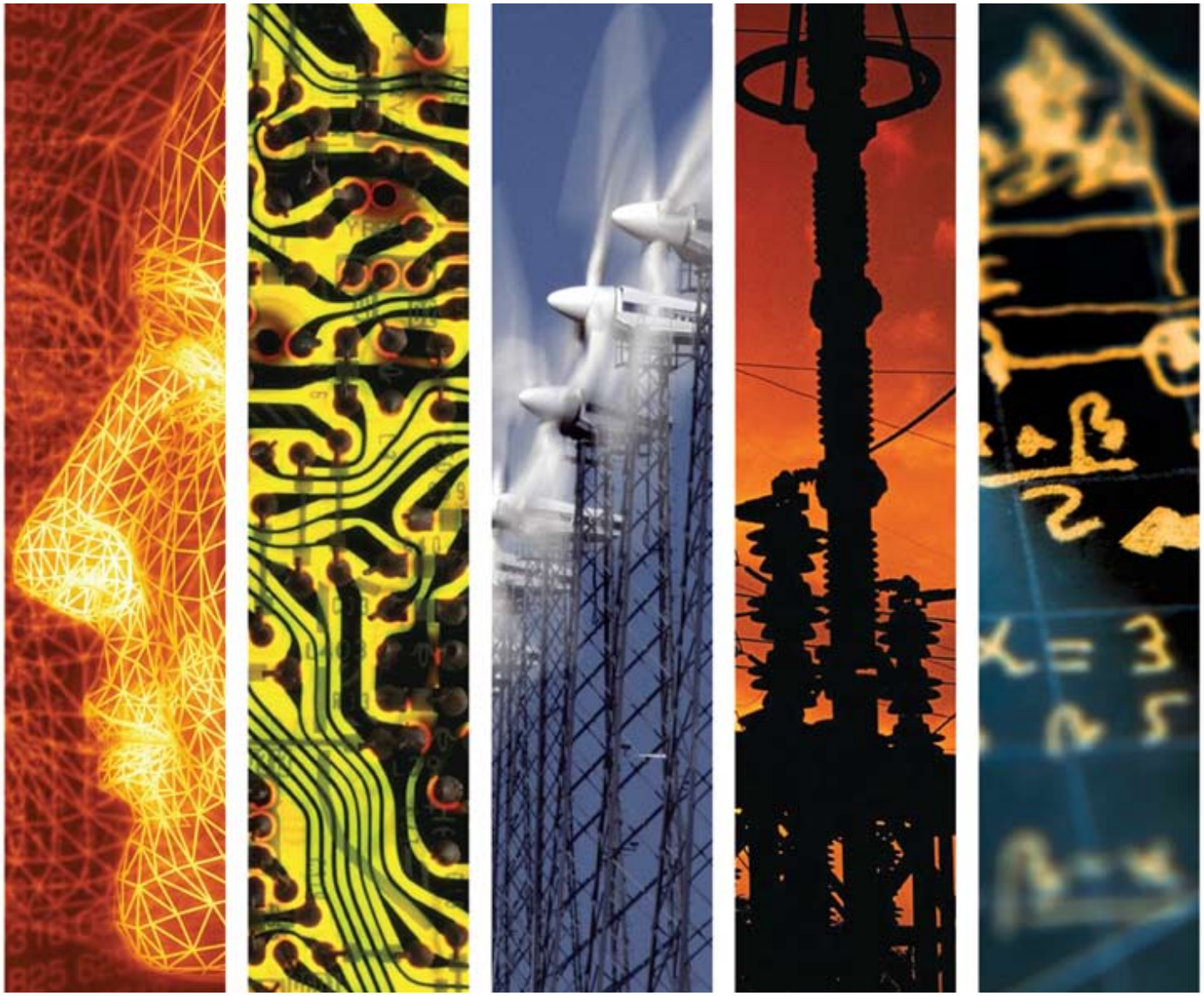
Inspec chemical indexing on **Engineering Village**



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Inspec Chemical Indexing on Engineering Village

Chemical Indexing is found in appropriate Inspec database records from the start of 1987. It is a controlled indexing system for inorganic substances and material systems.[1]

Inspec Chemical Indexing is designed to deal with a number of problems which arise in searching for chemical substances. These include:

- substances which occur in solid-state physics, such as gallium aluminium arsenide, which may be represented in a variety of ways, including GaAlAs or AlGaAs or $Ga_xAl_{1-x}As$ or $(GaAs)_{0.5}(AlAs)_{0.5}$, meaning that it is impracticable to enter all the necessary search terms for comprehensive retrieval. Inspec Chemical Indexing solves this by allowing you to search for any system containing gallium, aluminium and arsenic regardless of the original stoichiometry.

- some chemical element symbols or molecular formulae which have the same spellings as common English words, or may be ambiguous as they can be used as acronyms to represent other concepts, or may even be identical to Online Vendor system commands. For example gallium phosphide has the molecular formula GaP which also spells the English word gap, beryllium has the chemical element symbol Be which is the English verb “to be” (found in approximately one third of all Inspec records) but also the acronym for Boltzman Equation or Beta-Emission line. Inspec Chemical Indexing solves these problems because only chemical information appears in the Inspec Chemical Indexing field.

- the lack of differentiation between upper and lower case characters in the majority of Online Vendor search systems, leading to ambiguity when searching a molecular formula whose characters may also be used to represent a chemical element, such as cobalt and carbon monoxide, both represented by the letters c and o. Use of the Inspec

[1] If you want to search for organic compounds, you should use the compound name and search within the uncontrolled indexing field.

Chemical Indexing role for an element will differentiate cobalt Co from carbon monoxide, the binary system, CO.

Furthermore, you have a range of search options because Inspec applies Chemical Indexing to each inorganic substance or material system at three levels. For example, you could retrieve references to sulphuric acid, H_2SO_4, by using strategies including:

- H_2SO_4 itself because the whole substance or system is indexed,
- Any substance containing an SO_4 group or alternatively an H_2 group because the components are indexed, and
- Any substance containing H, S, and O because the individual elements making up the substance or system are indexed.

To enable you to distinguish between references to a component as an element or as a part of a more complex system, each indexed term has an associated role. These roles are:

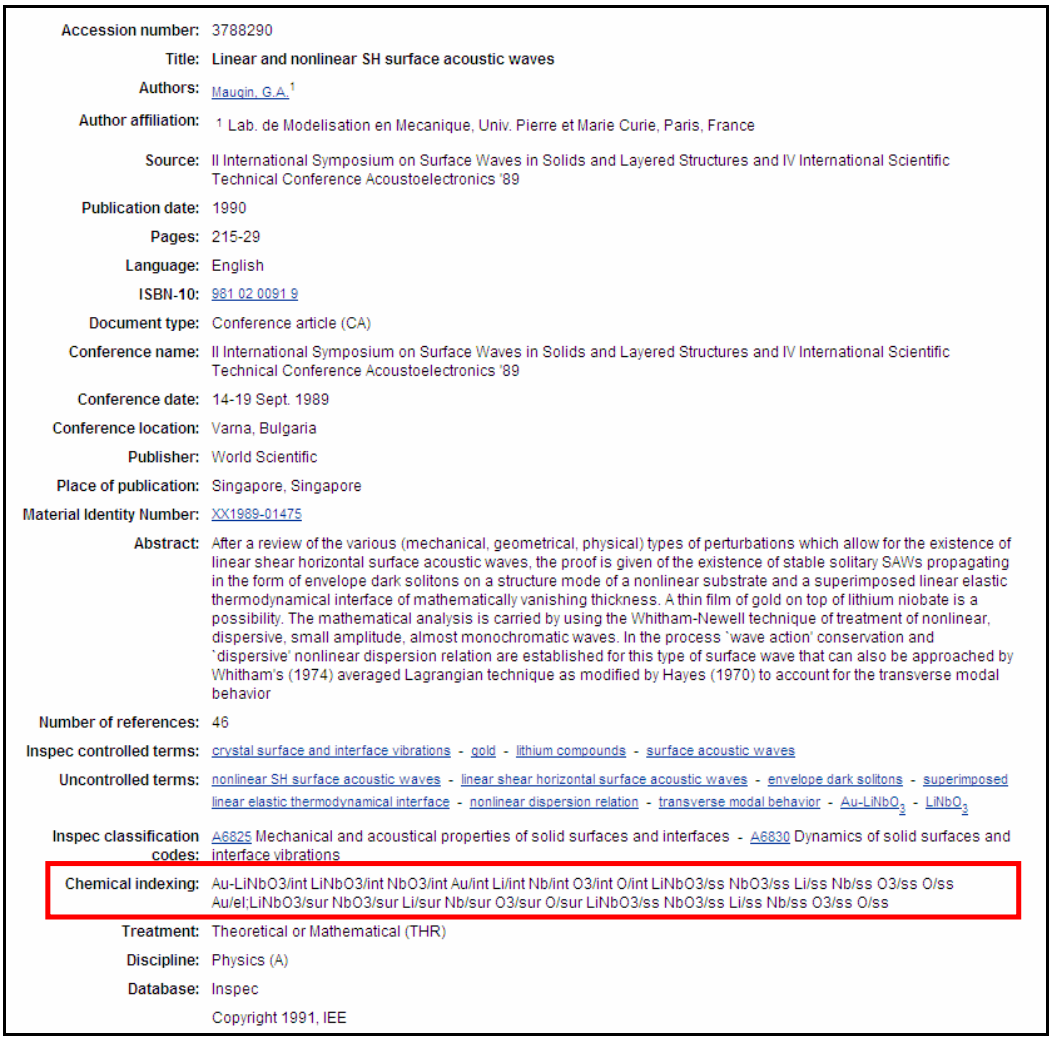
Table of Chemical Indexing Roles

Basic Roles	Abbreviation	Function Roles	Abbreviation
Element	EL	Adsorbate	ADS
Binary System	BIN	Dopant	DOP
System of >2 components	SS	Interface System	INT
		Surface/Substrate	SUR

Indexing Example

For the interface system Au-$LiNbO_3$

- The complete system with its role is indexed
  - e.g. Au-LiNbO3/int
- Any substances or material subsystems contained above are indexed with their roles
  - e.g. LiNbO3/int Au/int LiNbO3/ss Au/el
- Any chemical groups with their roles are indexed
  - e.g. NbO3/int NbO3/ss
- Chemical elements with any numbers (integers and decimals only) associated with composition, and their roles are indexed
  - e.g. O3/int O3/ss
- Chemical elements with their roles are indexed
  - e.g. Au/int Li/int Nb/int O/int Li/ss Nb/ss O/ss Au/el



Accession number:	3788290
Title:	**Linear and nonlinear SH surface acoustic waves**
Authors:	Maugin, G.A.[1]
Author affiliation:	[1] Lab. de Modelisation en Mecanique, Univ. Pierre et Marie Curie, Paris, France
Source:	II International Symposium on Surface Waves in Solids and Layered Structures and IV International Scientific Technical Conference Acoustoelectronics '89
Publication date:	1990
Pages:	215-29
Language:	English
ISBN-10:	981 02 0091 9
Document type:	Conference article (CA)
Conference name:	II International Symposium on Surface Waves in Solids and Layered Structures and IV International Scientific Technical Conference Acoustoelectronics '89
Conference date:	14-19 Sept. 1989
Conference location:	Varna, Bulgaria
Publisher:	World Scientific
Place of publication:	Singapore, Singapore
Material Identity Number:	XX1989-01475
Abstract:	After a review of the various (mechanical, geometrical, physical) types of perturbations which allow for the existence of linear shear horizontal surface acoustic waves, the proof is given of the existence of stable solitary SAWs propagating in the form of envelope dark solitons on a structure mode of a nonlinear substrate and a superimposed linear elastic thermodynamical interface of mathematically vanishing thickness. A thin film of gold on top of lithium niobate is a possibility. The mathematical analysis is carried by using the Whitham-Newell technique of treatment of nonlinear, dispersive, small amplitude, almost monochromatic waves. In the process `wave action' conservation and `dispersive' nonlinear dispersion relation are established for this type of surface wave that can also be approached by Whitham's (1974) averaged Lagrangian technique as modified by Hayes (1970) to account for the transverse modal behavior
Number of references:	46
Inspec controlled terms:	crystal surface and interface vibrations - gold - lithium compounds - surface acoustic waves
Uncontrolled terms:	nonlinear SH surface acoustic waves - linear shear horizontal surface acoustic waves - envelope dark solitons - superimposed linear elastic thermodynamical interface - nonlinear dispersion relation - transverse modal behavior - Au-$LiNbO_3$ - $LiNbO_3$
Inspec classification codes:	A6825 Mechanical and acoustical properties of solid surfaces and interfaces - A6830 Dynamics of solid surfaces and interface vibrations
Chemical indexing:	Au-LiNbO3/int LiNbO3/int NbO3/int Au/int Li/int Nb/int O3/int O/int LiNbO3/ss NbO3/ss Li/ss Nb/ss O3/ss O/ss Au/el;LiNbO3/sur NbO3/sur Li/sur Nb/sur O3/sur O/sur LiNbO3/ss NbO3/ss Li/ss Nb/ss O3/ss O/ss
Treatment:	Theoretical or Mathematical (THR)
Discipline:	Physics (A)
Database:	Inspec
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Figure 1: Sample Inspec Record from Engineering Village

If a given system contains two elements, then it is a binary system even if one of the elements is only a very minor component like a dopant.

Function Role Definitions

Role	Example	Criteria
adsorbate	CO/ads	Used for species being (ads)sorbed.
dopant	Si:P (Si doped by P)	Used for systems into which an impurity is diffused and those in which the impurity is a probe.
interface	InGaP-InAlP	Semiconductor junctions, devices, integrated circuits, electrochemical batteries, etc.
surface	Fe/sur	Used for surface or substrate, e.g. oxidation, corrosion, wear of iron.

To search for inorganic substances in documents added to the Inspec database before 1987, you should use the controlled and uncontrolled indexing fields. The controlled indexing field contains terms from the Inspec Thesaurus. See below for further details. The uncontrolled indexing field contains formulae rather than names of the substance, and will use the terminology of the original document.

Inspec Thesaurus Terms

Each chemical element has its own Inspec Thesaurus Term[2] e.g. HYDROGEN, GALLIUM, etc. which can be used to search for documents relating to studies of the indexed element. Many elements have Inspec Thesaurus Terms for their compounds, e.g. ALUMINIUM COMPOUNDS, MERCURY COMPOUNDS, etc. In addition, the Inspec Thesaurus has broader and narrower chemical terms such as ALKALI METAL COMPOUNDS, GALLIUM ARSENIDE, MIXED VALENCE COMPOUNDS, etc. Inspec use the most specific Inspec Thesaurus Terms to index documents. Therefore use of a broad term will not automatically retrieve documents indexed with narrower terms. Several Inspec Vendor search systems allow thesaurus terms to be "exploded" i.e. for a chosen thesaurus term to be searched along with all of its narrower terms automatically. Please consult the Inspec Thesaurus either Online or via the Inspec Search Aids CD-ROM for appropriate search terms and to see whether your chosen Vendor offers the "explode" feature. Use of the Inspec thesaurus terms allows retrieval of documents back to 1969.
Inspec Chemical Indexing Search Guide

Table of Vendor Search Examples

Inspec Vendor	Inspec Database including Chemical Indexing	Chemical Indexing Search Field	Chemical Indexing Roles	Chemical Indexing Search Examples
Engineering Village	Inspec	WN CI	/EL /BIN /SS /ADS /DOP /INT /SUR	*Search a single component:* BE/EL WN CI SI WN CI - for the component with any role *Search multiple components within a multicomponent system:* (GA/SS NEAR/2 AS/SS NEAR/2 AS/SS) WN CI where NEAR/2 indicates within the same indexing sentence and up to 2 terms in between. *Note: Only available in Expert search.*

[2] Inspec Thesaurus Terms use British English spelling and terminology, hence there is an Inspec Thesaurus Term SULPHUR which will be used for sulfur, ALUMINIUM for aluminum, etc.

Table of Chemical Elements and Their Symbols

Element	Symbol	Element	Symbol	Element	Symbol
actinium	Ac	hafnium*	Hf	praseodymium	Pr
aluminium	Al	hahnium *(now dubnium)*	Ha *(now Db)*	promethium	Pm
americium	Am			protactinium	Pa
antimony	Sb	hassium	Hs	radium	Ra
argon	Ar	helium	He	radon	Rn
arsenic	As	holmium*	Ho	rhenium	Re
astatine	At	hydrogen *see also deuterium, tritium*	H	rhodium	Rh
barium	Ba			roentgenium	Rg
berkelium	Bk			rubidium	Rb
beryllium	Be			ruthenium	Ru
bohrium	Bh	indium*	In	rutherfordium	Rf
bismuth	Bi	iodine	I	samarium	Sm
boron	B	iridium	Ir	scandium*	Sc
bromine	Br	iron	Fe	seaborgium	Sg
cadmium	Cd	krypton	Kr	selenium	Se
caesium*	Cs	lanthanum	La	silicon*	Si
calcium	Ca	lawrencium	Lr	silver	Ag
californium*	Cf	lead*	Pb	sodium	Na
carbon	C	lithium	Li	strontium	Sr
cerium	Ce	lutetium	Lu	sulphur	S
chlorine	Cl	magnesium	Mg	tantalum	Ta
chromium	Cr	manganese	Mn	technetium	Tc
cobalt*	Co	meitnerium	Mt	tellurium	Te
copper	Cu	mendelevium	Md	terbium	Tb
curium	Cm	mercury	Hg	thallium	Tl
deuterium *see also hydrogen*	D	molybdenum	Mo	thorium	Th
		neodymium	Nd	thulium	Tm
		neon	Ne	tin*	Sn
darmstadtium	Ds	neptunium*	Np	titanium	Ti
dubnium	Db	nickel*	Ni	tritium *see also hydrogen*	T
dysprosium	Dy	niobium*	Nb		
einsteinium	Es	nitrogen	N		
erbium	Er	nobelium*	No	tungsten	W
europium	Eu	osmium*	Os	uranium	U
fermium	Fm	oxygen	O	vanadium	V
fluorine	F	palladium	Pd	xenon	Xe
francium	Fr	phosphorus	P	ytterbium*	Yb
gadolinium	Gd	platinum	Pt	yttrium	Y
gallium	Ga	plutonium	Pu	zinc	Zn
germanium	Ge	polonium*	Po	zirconium	Zr
gold	Au	potassium	K		

[3]Certain element symbols when searched with the binary role, give ambiguous results, e.g. the letters c and o in a binary system could be the element cobalt within a binary system, or the binary system carbon monoxide. To differentiate the binary system, it is good practice to search both the binary system whole and one of the elements within the binary system, e.g. search CO/BIN AND C/BIN which will retrieve records where a carbon binary system is indexed, that system being CO. Alternatively combine the Chemical Indexing search with a search of the appropriate Inspec Thesaurus Term, e.g. S (CI=CO BIN) AND DE=CARBON COMPOUNDS . Searches of binary and multicomponent systems using the element symbols indicated by * in the table above need searching this way.

[4] Where an element symbol or a molecular formula matches a database field label or search system proximity operator, it may be necessary to enclose the search in quotes. For example, on OCLC the title field label is TI. This is the same as the element symbol for titanium. On OCLC search it as CI: "TI" W El. See individual Vendor Inspec data sheets for details.

Table of Chemical Groups and Their Formulae

Chemical Group Name	Chemical Group Formula	Chemical Group Name	Chemical Group Formula
alumina	Al2O3	iron garnet *see also ferrite*	Fe5O12
aluminium garnet	Al5O12		
arsenate	AsO4	magnesate	MgO3
arsenate	As2O3	manganate	MnO4
bismuthate	Bi2O3	molybdate	MoO4
borate	BO4	niobate	NbO3
borate	B2O3	niobate	Nb2O5
borate	B3O6	niobate	Nb2O7
borate (per-)	BO3	nitrate	NO3
bromate	BrO3	nitrite	NO2
carbonate	CO3	phosphate (ortho-)	PO4
carbonyl	CO	phosphate	P2O5
chromate (di-)	Cr2O7	phosphate (pyro-)	P2O7
chromate (per-)	CrO3	phosphite	PO3
/cyanide	CN	phosphite	P4O12
ferrite	Fe2O3	selenate	SeO4
ferrite	Fe2O4	selenite	SeO3
ferrite	Fe3O4	silica	SiO2
ferrite (ortho) *see also iron garnet*	FeO3	silicate	SiO4
		sulphate	SO4
gallium garnet	Ga5O12	sulphate (thio-)	S2O3
garnet (aluminium)	Al5O12	sulphite	SO3
garnet (gallium)	Ga5O12	tantalate	TaO3
garnet (iron)	Fe5O12	titanate	TiO3
germanate	GeO2	tungstate	WO3
germanate	GeO3	tungstate	WO4
hydroxyl	OH	vanadate	V2O5
hydroxyl (deuterated)	OD	vanadate (meta-)	VO3
iodate	IO3	vanadate (ortho-)	VO4
		zirconate	ZrO3

Table of Abbreviations and Their Corresponding Formulae

Abbreviation	Formula	Abbreviation	Formula
ADP	NH4N2PO4	KSP	KSnOPO4
AG	Al5O12	KTP	KTiOPO4
BBO	BaB2O4	LMN	PbMgO3NbO3
BEL	La2Be2O5	NASI *or* NASICON	NaZrSiO4PO4
BPSG	B2O3-P2O5-SiO2		
BSG	B2O3-SiO2	PLZT	PbLaZrO3TiO3
BSN	NaBaNb2O6	PMN	PbMgO3NbO3
BSO	Bi12SiO20	PSG	P2O5-SiO2
DKDP	KD2PO4	PZT	PbZrO3TiO3
GG	Ga5O12	SBN	SrBaNb2O6
IG	Fe5O12	YAP	YAlO3
ITO	InSnO	YLF	LiYF4
KDP	KH2PO4	ZBLAN	ZrF4-BaF2-LaF3-AlF3-NaF
KNSBN	KNaSrBaNb2O6	ZBLANP	ZrF4-BaF2-LaF3-AlF3-NaF-PbF2