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1974–present

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Nano-sized boron synthesis process towards the large scale production

Vignolo, Maurizio; Matera, Davide; Bernini, Cristina ; Siri, Antonio Sergio ; Bovone, Gianmarco; et al. **Chemical Engineering Journal** 256 (Nov 15, 2014): 32-38.

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AB

Abstract (summary) [Translate](#)

In the present paper a new process for large scale production of nano-sized boron is reported. The process can be summarized in several steps: boron oxide solubilization in hot water, cryogenic freezing of liquid phase, freezing-drying process, magnesiothermic reduction of boron oxide, boron purification. Each step is described in order to show the innovations and then the purified boron has been employed to synthesize the superconducting MgB₂ powder. It is worth to note that for the first time the same MgB₂ precursors were used to prepare the superconducting phase following four different techniques and the results directly compared. So several MgB₂ conductors were prepared applying different techniques, ex-situ, in-situ, via MgB₄ and RLI, and then their superconducting properties investigated. Furthermore morphology, grain size and purity of B and MgB₂ powder were analyzed by SEM analysis and X-ray diffraction technique. © 2014 Elsevier B.V.

Indexing (details) Cite

SUBT, SU

Subject
 Boron (major);
 Freezing (major);
 Purification (major);
 Superconductivity (major);
 X ray diffraction (major)

IF

Identifier (keyword) Nano-sized boron, Synthesis process

CC

Classification 902: FLUIDEX; Related Topics

TI

Title Nano-sized boron synthesis process towards the large scale production

AU, AUFN,AULN

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AF

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SL	Language of abstract	English
DTYPE	Document type	Article
PUB	Publication title	Chemical Engineering Journal
VO	Volume	256
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PSTYPE	Publication type	Journal
PB	Publisher	Elsevier
DOI	DOI	http://dx.doi.org/10.1016/j.cej.2014.06.118
AV	PII	S1385894714008675
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PD,YR	Publication date	Nov 15, 2014
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FAV	First available	2014-08-06
UD	Updates	2014-08-06 2014-08-06 2014-08-06 2014-08-06
	Database	FLUIDEX (Fluid Engineering Abstracts) (1974 - current)

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Field name	Field code	Example	Description and Notes
Abstract	AB	ab("nano-sized boron")	Use Adjacency and/or Boolean operators to narrow search results.
Abstract present	ABANY	"heavy metals" AND abany(yes)	Add: <i>AND ABANY(YES)</i> to a query to limit retrieval to records with abstracts.
Accession number	AN	an(1028753)	A unique document identification number assigned by the information provider.
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All fields	--	energy OR generation	Searches all fields. Use proximity and/or Boolean operators to narrow search results.
Author ¹ Author First Name Author Last Name	AU AUFN AULN	au("bernini, cristina") aufn(cristina) auln(Bernini)	Also searchable by the Look Up Citation tool.

Field name	Field code	Example	Description and Notes
First author	FAU	fau("vignolo maurizio")	Use FAU to find only the first author of a document. Additional authors will not be searched. Displayed within Author.
Author affiliation	AF	af(CNR-SPIN AND italy)	Includes data when available, such as department, organization, address, city ,state, country, author email, etc.
Classification	CC	cc(902) cc(fluidex)	Search by code or description.
CODEN	CODEN	coden(CMEJA)	
Conference country	CCNT	ccnt("united kingdom")	Also searchable with CF.
Conference start date	ESDT	esdt(1997-06-22)	Event Start date also searchable with CDT. All conference information searchable with CF.
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Conference number / type	CT	ct(48951)	Also searchable with CF.
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Date created	DCRE	dcre(20140723) dcre(<20080101)	The date on which the information provider created the record.
Document feature	DF	df(diagram) df(reference)	Numbers of tables, references, figures, etc.
Document status	DSTAT	dstat(new) dstat(revised)	
Document title	TI	ti("Nano-sized boron synthesis process towards the large scale production")	Includes alternate title. Does not include Publication title (PUB).
Title only	TIO	tio("nano crystal")	Searches only the Title, not Alternate title.
Alternate title	OTI	oti("nano-cristallites")	Usually an original language title, when the English title is in Document title. Field code TI also searches the Alternate title.
Document type	DTYPE	dtype(article)	
DOI	DOI	doi(10.1016/j.cej.2014.06.118)	Digital Object Identifier. Search the portion of the DOI that comes after http://dx.doi.org/ .
Editor	ED	ed("grundy, p")	Conference proceedings can have Editors, with Authors shown for a paper.

Field name	Field code	Example	Description and Notes
First available	FAV	fav(2014-08-06)	Date on which a record was first loaded on ProQuest Dialog. May have been subsequently updated.
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Identifier (keyword)	IF	if("synthesis process")	Keywords (uncontrolled vocabulary terms). Also searchable using SU. Search also contains terms from throughout the document which are calculated to be relevant.
ISBN	ISBN	isbn(9781870918015)	
ISSN	ISSN	issn(13858947)	
Issue	ISS	iss(4)	Also searchable by the Look Up Citation tool.
Journal title	JN	jn("chemical engineering journal")	Displayed in Publication title. Look-Up list available under Publication title.
Language	LA	la(english)	The language in which the document was originally published.
Language of abstract	SL	sl(english)	Summary language
Page count	PCT	pct(7)	Number of printed pages, when supplied
Pagination	PG	pg(32-38)	The start page is searchable on the Look Up Citation tool.
Start page	PAGE	page(32)	First page number – displayed within Pagination. Searchable on the Look Up Citation tool.
Publication date	PD	pd(20141115) pd(>=20110425) pd(20110501-20110731)	Also searchable by the Look Up Citation tool.
Publication title ¹	PUB	pub("chemical engineering journal")	Includes all Publication names, including conference titles. Journal names also searchable using JN.
Publication type	PSTYPE	pstype(books)	Preferred search uses Document type (DTYPE).
Publication year	YR	yr(2012)	Single year or a range of years may be searched. Displayed within Publication date.
Publisher	PB	pb(elsevier)	
Publisher location	PBL	pbl("new york")	
Report number	RP	rp("wrsc")	
Source details	SRC	src(avail*)	Includes Publication Title, Volume, Issue, Publication Date, Pagination, and similar items. Also searchable by the Look Up Citation tool.
Subject ¹	SU	su("X ray diffraction") su(boron)	Contains descriptors from controlled vocabulary. Also includes uncontrolled terms displayed as Identifiers (keywords); these are displayed separately.

Field name	Field code	Example	Description and Notes
Main subject	SUBT	subt("x ray diffraction")	SUBT searches terms from the Subject display field only. Terms selected from the Subject filter use the SUBT field code.
Supplier identifier	SID	"pui 373553332"	Alternative reference to a record given by the information provider. Searching using SID is being developed, so search without SID if necessary.
Title	TI	ti("flood risks")	Includes Alternate title. Does not include Publication title (PUB).
Updates	UD	ud(20140806) ud(>=20110326)	Date(s) when updates provided by the supplier reached a certain point within the ProQuest load/update process.
Volume	VO	vo(256)	Also searchable by the Look Up Citation tool.

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Brief citation	Complete record minus the Abstract and indexing.	✓	✓
Citation/Abstract	Complete record with Abstract.	✓ ¹	✓
Custom	Choose the fields you want.		✓ ²

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