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Electrooxidation of hydrazine hydrate using NiaLa catalyst for anion exchange membrane fuel cells

Sakamoto, Tomokazu; Asazawa, Koichiro; Martinez, Ulises ; Halevi, Barr; Suzuki, Toshiyuki; et al. **Journal of Power Sources** 234 (Jul 15, 2013): 252-259.

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AB

Abstract (summary) [Translate](#)

Carbon supported Ni, La, and Ni_{1-x}La_x (0.1ANB<=ANBxANB<=ANB0.9) catalysts were synthesized by an impregnation/freeze-drying procedure followed by thermal annealing. The catalytic activity for electro-oxidation of hydrazine hydrate on anionic ionomer-coated catalysts was evaluated using a (4ANBxANB4) 16-channel electrochemical electrode array in 1.0ANBM KOHANB+ANB1.0ANBM hydrazine hydrate solution at 60ANB degree C. The Ni_{0.9}La_{0.1}/C catalyst oxidized hydrazine hydrate at a lower potential and exhibited higher mass activity in comparison with a similarly made Ni/C catalyst. Chemical insight suggests that the cause of improved performance for the Ni_{0.9}La_{0.1}/C catalyst is likely multifunctional synergism of the components. However, X-ray absorption fine structure (XAFS) and high voltage electron microscopy (HVEM) unexpectedly show some hcp-LaNi₅ shells coating the fcc-Ni catalyst particles. As a result of the screening tests, an unsupported Ni_{0.9}La_{0.1} catalyst was synthesized by spray pyrolysis and tested in a direct hydrazine hydrate fuel cell MEA (DHFC) producing 453ANBmWANBcm-2.

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Subject	Carbon; Fuel cells; Nickel; High voltages; Hydrates; Catalysts; Arrays; Hydrazines
Title	Electrooxidation of hydrazine hydrate using NiaLa catalyst for anion exchange membrane fuel cells
Author	Sakamoto, Tomokazu; Asazawa, Koichiro; Martinez, Ulises; Halevi, Barr; Suzuki, Toshiyuki; Arai, Shigeo; Matsumura, Daiju; Nishihata, Yasuo; Atanassov, Plamen; Tanaka, Hirohisa
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Database	2 databases View list

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Accession number	AN	an(17991762)	A unique document identification number assigned by the information provider. A record can display multiple accession numbers – depending on the products within which it is stored.
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All fields + text	--	"direct hydrazine hydrate fuel cell"	Same as ALL field code: searches all fields in bibliographic files.
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Classification code ²	CC	cc("electrical properties")	Not currently displayed
Conference information	CF	cf("offshore structures ") cf(glasgow) cf(sweden) cf(2008)	Includes conference title, location, number, date.
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Date revised	DREV	drev(2013-06-01) drev(>20131231)	Date that the Information provider revised the record. Note that not all Providers identify a date of revision.

DOI	DOI	doi("10.1007/s00707-013-0941-z")	Digital Object Identifier. Search the portion of the DOI that comes after http://dx.doi.org/ .
Document feature	DF	df(graphs)	Indicates presence in original article of availability of graphics, tabular data, illustrations, etc.
Document title	TI	ti("Electrooxidation of hydrazine hydrate using NiaLa catalyst")	Includes Title, Alternate Title, Original Title, and Subtitle but not Publication Title (PUB).
Title only	TIO	tio("NiaLa catalyst")	Searches only the Title, not Subtitle or Alternate Title.
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First author	FAU	fau("sakamoto, tomokazu)	First name listed in Author field. It is included in Author browse, but its position cannot be specified in the Author browse. See also Author.
First available	FAV	fav(20130606) fav(>20131231) fav(20120101-20120630)	Indicates the first time a document was loaded in a specific database on PQD. It will not change regardless of how many times the record is subsequently reloaded, as long as the accession number does not change.
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Identifier (keyword)	IF	if(irrigation OR drainage)	
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Journal title	JN, PUB	jn("journal of power sources")	Journal names only. For complete Publication name types, use PUB. Displays in Publication title. Also searchable via the Look Up Citation tool for Publication name.
Language	LA	la(english)	The language in which the document was originally published.

Notes	NT	nt(reprint*)	
Number of pages	PCT	pct(8)	
Pagination	PG	pg(252-259)	See also Start page.
Patent application date	PAD	pad(20040501) pad(2004-05-01) pad(>20101231) pad(20110101-20110630)	Displays in Patent information
Patent application number	PA, PAT	pa("10/840183")	Displays in Patent information
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Publication year	YR, PY	yr(2015) yr(>2011) yr(2013-2014)	Single year or a range of years may be searched. Displays in Publication date.
Publisher	PB	pb("wiley blackwell")	
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Source type	PT, STYPE	stype("conference papers & proceedings")	Searches references cited in the original document.
Start page	FP	fp(134)	Also searchable on the Look Up Citation page. Displays in Pagination.
Subfile	SFL	sfl(metadex) sfl(The individual database(s) in which the record appears. Also searchable using two-letter codes (see appendix 1,below)
Subject ²	SU	su(catalysts)	

Updates	UD	ud(20130606)	
Volume	VO	vo(234)	

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