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TI

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

AU
PUB

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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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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Identifier (keyword)	IF	if(irrigation OR drainage)	
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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.
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Subject ²	SU	su(catalysts)	
Updates	UD	ud(20130606)	
Volume	VO	vo(234)	

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