3.3.1 Number of research papers published per teacher in the Journals notified on UGC Care list during the last five years

Sr. No	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC		
							Link to website of the Journal	Link to article / paper /	Is it listed
1	Amorphous nickel tungstate films prepared by SILAR method for electrocatalytic oxygen evolution reaction	D.B. Malavekar a, V.C. L okhande b, **D.J. Patil** c, S.B. Kale a, U.M. Patil a, T. Ji b, C.D. Lokhande a	General Engineering	Journal of Colloid and Interface Science	2022	Science Direct elesiver	https://doi.org/10.1016/j.jcis.2021.11.074	https://doi.org/10.1016/j.jcis.2021.11.074	Yes
2	Binder-Free Synthesis of Mesoporous Nickel Tungstate for Aqueous Asymmetric Supercapacitor Applications: Effect of Film Thickness	**Dilip J. Patil,** Dhanaji B. Malavekar, Vaibhav C. Lokhande, Prity P. Bagwade, Sambhaji D. Khot, Taeksoo Ji, Chandrakant D. Lokhande	General Engineering	Energy Technology	2022	Science Direct elesiver	DOI: 10.1002/ente.202200295	DOI: 10.1002/ente.202200295	Yes
3	SILAR synthesized dysprosium selenide (Dy2Se3) thin films for hybrid electrochemical	S.D. Khot a, D.B. Malavekar a, R.P. Nikam a, S.B. Ubale a, P.P. Bagwade a, **D.J. Patil** a, V.C. Lokhande b, C.D.	General Engineering	Synthetic metals	2022	Science Direct elesiver	https://doi.org/10.1016/j.synthmet.2022.117075	https://doi.org/10.1016/j.synthmet.2022.117075	Yes
4	Nanocrystalline cobalt tungstate thin films prepared by SILAR method for electrocatalytic oxygen evolution reaction	P.P. Bagwade, D.B. Malavekar, V.V. Magdum, S. D. Khot, R.P. Nikam, **D.J. Patil**, U.M. Patil, C. D. Lokhande	General Engineering	International Journal of Hydrogen Energy	2023	Science Direct elesiver	https://doi.org/10.1016/j.ijhydene.2022.11.090	https://doi.org/10.1016/j.ijhydene.2022.11.090	Yes

D. Y. PATIL TECHNICAL CAMPUS
Faculty of Engineering & Faculty of Management Dist. Kolhapur DTE Code 6780

Director
D. Y. Patil Technical Campus
Faculty of Engineering & Faculty of Management
Talsande, Tal. Hatkanangale, Dist. Kolhapur

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Journal of Colloid and Interface Science

Volume 609, March 2022, Pages 734-745

Amorphous nickel tungstate films prepared by SILAR method for electrocatalytic oxygen evolution reaction

D.B. Malavekar [a], V.C. Lokhande [b], D.J. Patil [c], S.B. Kale [a], U.M. Patil [a], T. Ji [b], C.D. Lokhande [a]

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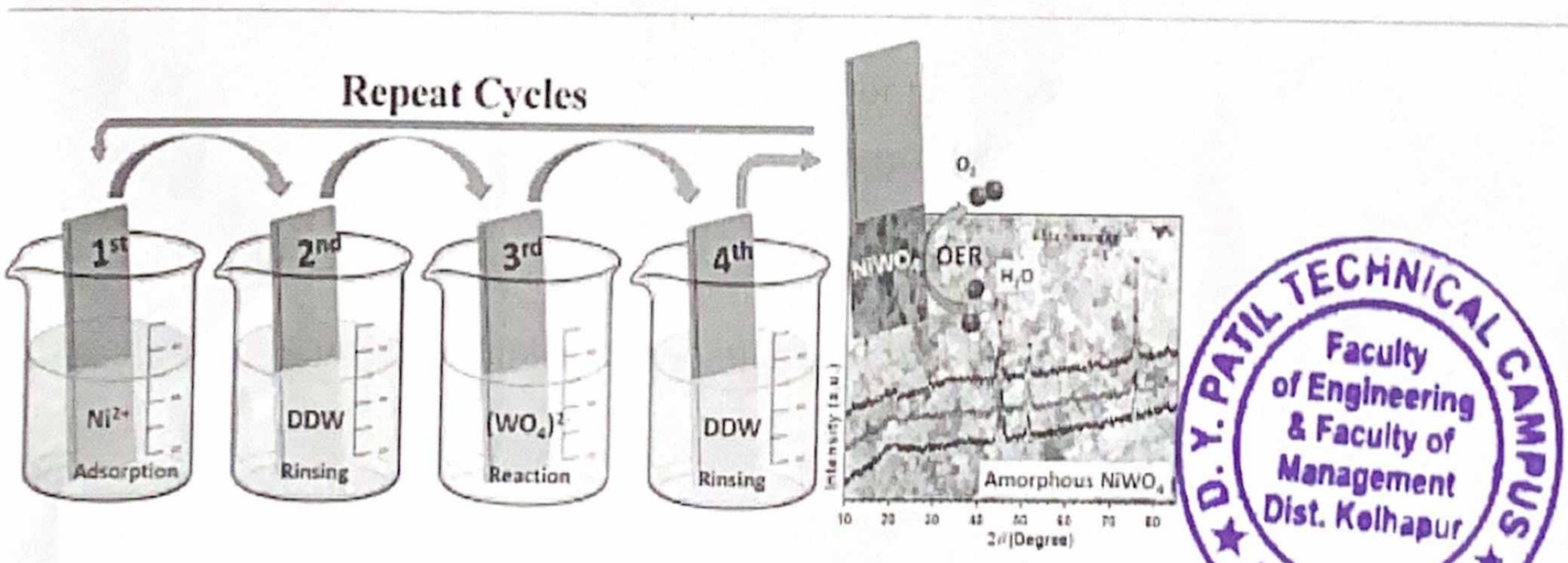
Abstract

Development of electrocatalyst using facile way from non-noble metal compounds with high efficiency for effective water electrolysis is highly demanding for production of hydrogen energy. Nickel based electrocatalysts were currently developed for electrochemical water oxidation in alkaline pH. Herein, amorphous nickel tungstate ($NiWO_4$) was synthesized using the facile successive ionic layer adsorption and reaction method. The films were characterized by X-ray diffraction, Raman spectroscopy, Fourier transfer infrared spectroscopy, scanning electron microscopy, X-ray photoelectron spectroscopy, and transmission electron microscopy techniques. The electrochemical analysis showed 315 mV of overpotential at 100 mA cm^{-2} with lowest Tafel slope of 32 mV dec^{-1} for oxygen evolution reaction (OER) making films of $NiWO_4$ compatible towards electrocatalysis of water in alkaline media. The chronopotentiometry measurements at 100 mA cm^{-2} over 24 h showed 97% retention of OER activity. The electrochemical active surface area (ECSA) of NW120 film was 25.5 cm^{-2}.

Graphical abstract



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Keywords

Amorphous electrocatalyst; Nickel tungstate; Successive ionic layer adsorption and reaction (SILAR); Thin film, Water electrocatalysis

Energy Technology / Volume 10, Issue 8 / 2200295

Research Article

Binder-Free Synthesis of Mesoporous Nickel Tungstate for Aqueous Asymmetric Supercapacitor Applications: Effect of Film Thickness

Dilip J. Patil, Dhanaji B. Malavekar, Vaibhav C. Lokhande, Prity P. Bagwade, Sambhaji D. Khot, Taeksoo Ji, Chandrakant D. Lokhande ✉

First published: 15 June 2022
https://doi.org/10.1002/ente.202200295

Abstract

Nickel tungstate thin films of different thicknesses are synthesized using the binder-free successive ionic layer adsorption and reaction (SILAR) method at ambient temperature and subsequent calcination at a temperature of 727 K. The physicochemical characterizations of $NiWO_4$ thin films are carried out using different techniques. The electrochemical performances of $NiWO_4$ films are evaluated in 2 M KOH electrolyte using a standard three electrode system. The specific capacitance of 1536 F g^{-1} at the current density of 2 A g^{-1} is obtained for the $NiWO_4$ film. The film exhibits excellent electrochemical stability of 87% after 5000 galvanostatic charge–discharge (GCD) cycles at the current density of 3 A g^{-1}. This study highlights use of SILAR-deposited $NiWO_4$ thin films as a cathode in aqueous asymmetric supercapacitors (ASCs). The ASC device $NiWO_4$/KOH/Fe_2O_3 exhibits a specific capacitance of 115 F g^{-1} at 2 A g^{-1} and specific energy of 23Wh kg^{-1} at specific power of 1.2 kW kg^{-1}. The device shows remarkable electrochemical cycling stability (78% capacitance retention after 5000 GCD cycles). The SILAR-deposited $NiWO_4$ thin films are expected to emerge as a potential candidate for supercapacitors.

Conflict of Interest

The authors declare no conflict of interest.

Open Research

Data Availability Statement

The data that support the findings of this study are available from the corresponding authors upon reasonable request.

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Synthetic Metals
Volume 287, July 2022, 117075

SILAR synthesized dysprosium selenide (Dy_2Se_3) thin films for hybrid electrochemical capacitors

S.D. Khot [a], D.B. Malavekar [a], R.P. Nikam [a], S.B. Ubale [a], P.P. Bagwade [a], D.J. Patil [a], V.C. Lokhande [b], C.D. Lokhande [a]

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Highlights

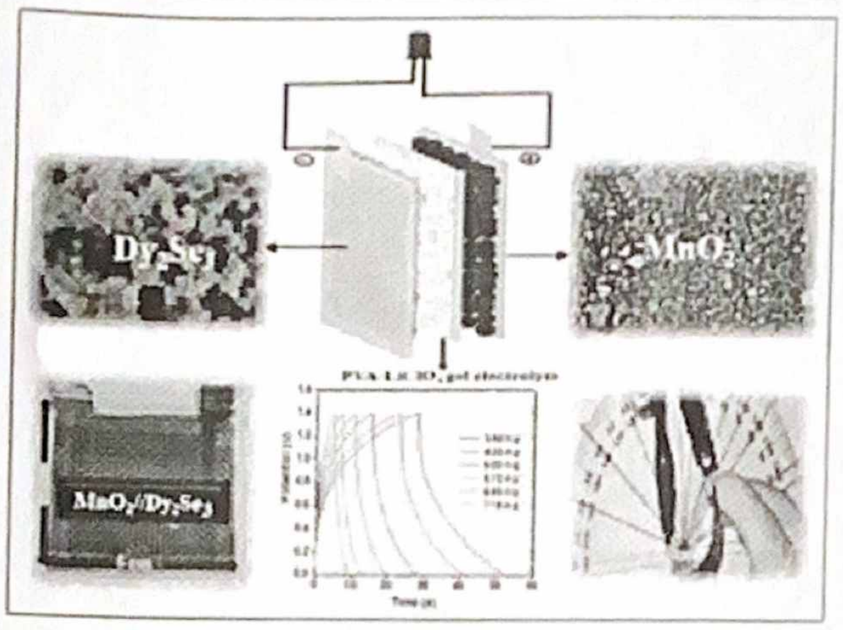
- The novel Dy_2Se_3 thin films were synthesized using successive ionic layer adsorption and reaction method.
- Dy_2Se_3 electrode exhibits specific capacitance of $92\,Fg^{-1}$ at current density of $2.85\,Ag^{-1}$.
- Hybrid device delivers $18\,Whkg^{-1}$ specific energy at $2.668\,kWkg^{-1}$.
- This hybrid device retained 92.82% of capacitance at a device bending angle of 160°.

Abstract

As the necessity of energy storage is continuously increasing, new materials have been investigated for electrochemical energy storage, especially for electrochemical capacitors. These storage devices are rapidly convertible as well as air pollution free. Therefore, a number of materials have been explored as electrode materials for supercapacitors to fulfill different requirements of electrochemical energy storage. Herewith, dysprosium selenide (Dy_2Se_3) films were prepared using the simple-successive ionic layer adsorption and reaction (SILAR) method and characterized using different physico-chemical techniques. The specific capacitance (C_s) of $92\,Fg^{-1}$ was obtained at the current density of $2.85\,Ag^{-1}$ in 1M $LiClO_4$ electrolyte with a retention of 85% over 5000 galvanostatic charge-discharge (GCD) cycles performed at a current density of $4\,Ag^{-1}$. The flexible solid-state hybrid electrochemical capacitor of configuration $Dy_2Se_3/LiClO_4$-PVA/MnO_2 showed C_s of $83\,Fg^{-1}$ and specific energy of $18\,Whkg^{-1}$ at a specific power of $2.7\,kWkg^{-1}$. This hybrid device

retained 92% of capacitance at a device bending angle of 160°. These results demonstrate the facile synthesis of Dy_2Se_3 and its possible use in electrochemical energy storage applications.

Graphical Abstract



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Keywords

Dysprosium selenide; Flexible hybrid electrochemical capacitor; Successive ionic layer adsorption and reaction (SILAR) method; Thin film

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Recent Advances in the Growth and Characterizations of SILAR-Deposited Thin Films
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In Situ Growth Mos<inf>2</inf>/Nis Composite on Ni Foam as Electrode Materials for Supercapacitors

2022, SSRN

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ScienceDirect

International Journal of Hydrogen Energy
Volume 48, Issue 23, 15 March 2023, Pages 8465-8477

Nanocrystalline cobalt tungstate thin films prepared by SILAR method for electrocatalytic oxygen evolution reaction

P.P. Bagwade, D.B. Malavekar, V.V. Magdum, S.D. Khot, R.P. Nikam, D.J. Patil, U.M. Patil, C.D. Lokhande

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https://doi.org/10.1016/j.ijhydene.2022.11.090
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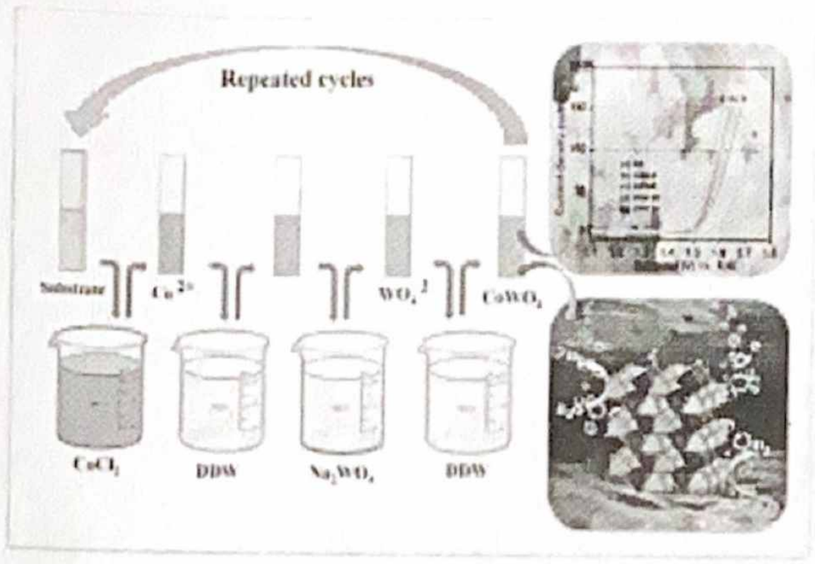
Highlights

- $CoWO_4$ thin film electrocatalysts prepared by SILAR method was employed for oxygen evolution reaction.
- The $CoWO_4$ material exhibited porous morphology with specific surface area of $49.3\,m^2g^{-1}$.
- $CoWO_4$ electrode exhibited excellent OER functioning with overpotential of 330 mV at a current density of $100\,mAcm^{-2}$.
- $CoWO_4$ thin film electrode exhibited remarkable stability (97%) after 24 h in 1 M KOH.

Abstract

This study highlights on the application of nanocrystalline cobalt tungstate ($CoWO_4$) thin films as an electrocatalyst for oxygen evolution reaction (OER) prepared using successive ionic layer adsorption and reaction (SILAR) method. The X-ray diffraction, scanning electron microscopy, X-ray photoelectron spectroscopy, Fourier transform infrared spectroscopy etc. were employed for the characterization of $CoWO_4$ thin films, revealing the formation of crystalline $CoWO_4$ with spherical morphology. Furthermore, $CoWO_4$ showed excellent electrochemical performance with the overpotential of 330 mV and Tafel slope of $153\,mVdec^{-1}$ with retaining 97% of electrochemical stability after 24 h of OER. The study confirmed the structural maintenance of $CoWO_4$ thin films after stability study.

Graphical abstract



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Keywords

Cobalt tungstate; Thin film; Electrocatalyst; Oxygen evolution reaction; Successive ionic layer adsorption and reaction (SILAR)

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