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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	The Characterisation of MWCNT-rGO-TiO2 Nanocomposite as Potential Electrode Material for Hybrid Supercapacitor		
Nama/ Jumlah Penulis	:	4 Orang		
Status Pengusul	:	~~Penulis pertama/~~ Penulis ke 3 ~~/ Penulis Korespondesi **~~		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	International Journal of Electrochemical Science
		b. Nomor ISSN	:	1452-3981
		c. Vol, No., Bln Thn	:	Vol 17 No 5, Mei 2022 Hal 1-10
		d. Penerbit	:	Electrohemical Science Group
		e. DOI artikel (jika ada)	:	10.20964/2022.05.10
		f. Alamat web jurnal	:	http://www.electrochemsci.org/list22.htm#issue5
		Alamat Artikel	:	www.electrochemsci.org/papers/vol17/22053.pdf
		g. Terindex	:	Scopus (Q4, SJR 0,31)

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Semarang, 8 Maret 2023

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Prof. Dr. Rahmat Gernowo, M.Si
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Semarang, 1 Maret 2023
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Prof. Dr. Drs. Rahmat Gernowo, M.Si.
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Bidang Ilmu: Fakultas Sains dan Matematika

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d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			11,50
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Semarang, 1 Maret 2023
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The Characterisation of MWCNT-rGO-TiO2 Nanocomposite as Potential Electrode Material for Hybrid Supercapacitor

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Abstract

Increasing energy demands are triggering the development of high performance, low-cost supercapacitor electrode material, particularly in countries that are shifting to renewable energy as their current energy supply cannot meet their significant energy demands. These countries require high-voltage, safe and long-lasting electrical energy storage devices. Multi-walled carbon nanotubes (MWCNTs), reduced graphene oxide (rGO) and Titanium Dioxide (TiO2) were tested during an in-situ

hydrothermal process. The structure test of X-ray diffraction (XRD) and scanning electron microscope (SEM) characterisation was used to determine the relation between the morphology of the electrode and its electrochemical value. The morphology of the composite electrode indicated that the nanocomposite electrode had better values than the single material electrode. Additionally, cyclic voltammetry (CV) and electrochemical impedance spectrum (EIS) tested in a two-electrode system indicated that the specific capacitance of MWCNT-rGO-TiO2 30% was 168 F g^{-1} and showed the energy and power density to be 15 Wh kg^{-1} and 337.5 W kg^{-1}, respectively. This result was higher with the other electrode due to the faradaic and non-faradaic processes in the electrode.

Author keywords

electrochemical reaction; hydrothermal method; morphology; MWCNT; rGO; supercapacitor; TiO2

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References (24) View in search results format >

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1 Sihite, E.B.O., Stepanus, Budiarto

Study of the effect of supercapasitors types on crystal structure and microstructure of supercapasitor electrode materials (Open Access)

(2020) *IOP Conference Series: Materials Science and Engineering*, 725 (1), art. no. 012042.
https://iopscience.iop.org/journal/1757-899X
doi: 10.1088/1757-899X/725/1/012042

View at Publisher

2 Shahbaz, M., Topcu, B.A., Sarıgül, S.S., Vo, X.V.

The effect of financial development on renewable energy demand: The case of developing countries

(2021) *Renewable Energy*, 178, pp. 1370-1380. Cited 89 times.
http://www.journals.elsevier.com.proxy.undip.ac.id:2048/renewable-and-sustainable-energy-reviews/
doi: 10.1016/j.renene.2021.06.121

View at Publisher

3 Choudhary, V., Gupt, A.
(2011) *Polym. Compos*, p. 65.
3

4 Liu, X., Xue, L., Lu, Y., Xia, Y., Li, Q.
(2020) *J. Electroanal. Chem*, 862, p. 3.
4

5 Iurchenkova, A.A., Fedorovskaya, E.O., Asanov, I.P., Arkhipov, V.E., Popov, K.M., Baskakova, K.I., Okotrub, A.V.

MWCNT buckypaper/polypyrrole nanocomposites for supercapasitor application

(2020) *Electrochimica Acta*, 335, art. no. 135700. Cited 25 times.
http://www.journals.elsevier.com.proxy.undip.ac.id:2048/electrochimica-acta/
doi: 10.1016/j.electacta.2020.135700

View at Publisher

6 Taer, E., Putri, A., Farma, R., Awitdrus, Taslim, R., Apriwandi, Agustino, (...), Yusra, D.A.

The effect of potassium iodide (KI) addition to aqueous-based electrolyte (sulfuric acid/H_2SO_4) for increase the performance of supercapacitor cells

(2020) *Materials Today: Proceedings*, Part 3 44, pp. 3241-3244. Cited 4 times.
https://www-sciencedirect-com.proxy.undip.ac.id/journal/materials-today-proceedings
doi: 10.1016/j.matpr.2020.11.447

View at Publisher

7 Karaphun, A., Phrompet, C., Tuichai, W., Chanlek, N., Sriwong, C., Ruttanapun, C.

The influence of annealing on a large specific surface area and enhancing electrochemical properties of reduced graphene oxide to improve the performance of the active electrode of supercapacitor devices

(2021) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 264, art. no. 114941. Cited 17 times.
https://www-journals-elsevier-com.proxy.undip.ac.id/materials-science-and-engineering-b
doi: 10.1016/j.mseb.2020.114941

View at Publisher

8 Jin, L., Wei, K., Xia, Y., Liu, B., Zhang, K., Gao, H., Chu, X., (...), Lin, P.

Tree leaves-derived three-dimensional porous networks as separators for graphene-based supercapacitors

(2019) *Materials Today Energy*, 14, art. no. 100348. Cited 12 times.
https://www-journals-elsevier-com.proxy.undip.ac.id/materials-today-energy
doi: 10.1016/j.mtener.2019.100348

View at Publisher

9 El-Kady, M.F., Ihns, M., Li, M., Hwang, J.Y., Mousavi, M.F., Chaney, L., Lech, A.T., (...), Kaner, R.B.

Engineering three-dimensional hybrid supercapacitors and microsupercapacitors for high-performance integrated energy storage (Open Access)

(2015) *Proceedings of the National Academy of Sciences of the United States of America*, 112 (14), pp. 4233-4238. Cited 440 times.
http://www.pnas.org/content/112/14/4233.full.pdf
doi: 10.1073/pnas.1420398112

View at Publisher

10 Choi, H.-J., Kim, J.H., Kim, H.-K., Lee, S.-H., Lee, Y.-H.

Improving the Electrochemical Performance of Hybrid Supercapacitor using Well-organized Urchin-like TiO_2 and Activated Carbon

(2016) *Electrochimica Acta*, 208, pp. 202-210. Cited 34 times.
http://www.journals.elsevier.com.proxy.undip.ac.id:2048/electrochimica-acta/
doi: 10.1016/j.electacta.2016.05.039

View at Publisher

11 Lal, M.S., Badam, R., Matsumi, N., Ramaprabhu, S.

Hydrothermal synthesis of single-walled carbon nanotubes/TiO_2 for quasi-solid-state composite-type symmetric hybrid supercapacitors

(2021) *Journal of Energy Storage*, 40, art. no. 102794. Cited 17 times.
http://www.journals.elsevier.com.proxy.undip.ac.id:2048/journal-of-energy-storage/
doi: 10.1016/j.est.2021.102794

View at Publisher

12 Omer, A.M., Abd El-Monaem, E.M., El-Subruiti, G.M., Abd El-Latif, M.M., Eltaweil, A.S.

Fabrication of easy separable and reusable MIL-125(Ti)/MIL-53(Fe) binary MOF/CNT/Alginate composite microbeads for tetracycline removal from water bodies (Open Access)

(2021) *Scientific Reports*, 11 (1), art. no. 23818. Cited 117 times.
www.nature.com/srep/index.html
doi: 10.1038/s41598-021-03428-z

View at Publisher

13 Rajagopal, R., Ryu, K.-S.

Synthesis of rGO-doped Nb_4O_5–TiO_2 nanorods for photocatalytic and electrochemical energy storage applications

(2018) *Applied Catalysis B: Environmental*, 236, pp. 125-139. Cited 42 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2018.03.112

View at Publisher

14 Sundriyal, S., Shrivastav, V., Sharma, M., Mishra, S., Deep, A.

Significantly enhanced performance of rGO/TiO_2 nanosheet composite electrodes based 1.8 V symmetrical supercapacitor with use of redox additive electrolyte

(2019) *Journal of Alloys and Compounds*, 790, pp. 377-387. Cited 51 times.
https://www-journals-elsevier-com.proxy.undip.ac.id/journal-of-alloys-and-compounds
doi: 10.1016/j.jallcom.2019.03.150

View at Publisher

15 Abdel-Ghani, N.T., El-Chaghaby, G.A., Helal, F.S.

Individual and competitive adsorption of phenol and nickel onto multiwalled carbon nanotubes (Open Access)

(2015) *Journal of Advanced Research*, 6 (3), pp. 405-415. Cited 94 times.
http://www.elsevier.com.proxy.undip.ac.id:2048/wps/find/journaldescription.cws_home/722881/description#description
doi: 10.1016/j.jare.2014.06.001

View at Publisher

16 Su, X., He, Q., Yang, Y.-E., Cheng, G., Dang, D., Yu, L.

Free-standing nitrogen-doped TiO_2 nanorod arrays with enhanced capacitive capability for supercapacitors

(2021) *Diamond and Related Materials*, 114, art. no. 108168. Cited 15 times.
https://www-journals-elsevier-com.proxy.undip.ac.id/diamond-and-related-materials
doi: 10.1016/j.diamond.2020.108168

View at Publisher

17 Nirmala Devi, E., Chandra Sekhar, M., Seshagiri Rao, N.V.S.S.

Synthesis of iron oxide nanoparticles and their electrochemical behavior

(2021) *AIP Conference Proceedings*, 2417, art. no. 020020.
http://scitation.aip.org/content/aip/proceeding/aipcp
ISBN: 978-073544148-4
doi: 10.1063/5.0072685

View at Publisher

18 Mendoza, R., Al-Sardar, M., Oliva, A.I., Robledo-Trujillo, G., Rodriguez-Gonzalez, V., Zakhidov, A., Oliva, J.

Improving the electrochemical performance of flexible carbon nanotubes based supercapacitors by depositing Ni@TiO_2:W nanoparticles on their anodes

(2021) *Journal of Physics and Chemistry of Solids*, 155, art. no. 110128. Cited 10 times.
https://www-journals-elsevier-com.proxy.undip.ac.id/journal-of-physics-and-chemistry-of-solids
doi: 10.1016/j.jpcs.2021.110128

View at Publisher

19 Li, T., Wu, Y., Wang, Q., Zhang, D., Zhang, A., Miao, M.

TiO_2 crystalline structure and electrochemical performance in two-ply yarn CNT/TiO_2 asymmetric supercapacitors

(2017) *Journal of Materials Science*, 52 (13), pp. 7733-7743. Cited 24 times.
doi: 10.1007/s10853-017-1033-6

View at Publisher

20 Thakur, A.K., Choudhary, R.B., Majumder, M., Majhi, M.

Fairly improved pseudocapacitance of PTP/PANI/TiO_2 nanohybrid composite electrode material for supercapacitor applications

(2018) *Ionics*, 24 (1), pp. 257-268. Cited 31 times.
http://www.springerlink.com.proxy.undip.ac.id:2048/content/120106/
doi: 10.1007/s11581-017-2183-x

View at Publisher

21 Agharezaei, P., Abdizadeh, H., Golobostanfard, M.R.

Flexible supercapacitor electrodes based on TiO_2/rGO/TiO_2 sandwich type hybrids

(2018) *Ceramics International*, 44 (4), pp. 4132-4141. Cited 25 times.
doi: 10.1016/j.ceramint.2017.11.214

View at Publisher

22 Devi, C., Swaroop, R., Arya, A., Tanwar, S., Sharma, A.L., Kumar, S.
(2021) *Polym. Bull*, 3, p. 03737.
22

23 Ramesh Reddy, N., Mamatha Kumari, M., Shankar, M.V., Raghava Reddy, K., Woo Joo, S., Aminabhavi, T.M.

Photocatalytic hydrogen production from dye contaminated water and electrochemical supercapacitors using carbon nanohorns and TiO_2 nanoflower heterogeneous catalysts

(2021) *Journal of Environmental Management*, 277, art. no. 111433. Cited 29 times.
http://www.elsevier.com.proxy.undip.ac.id:2048/inca/publications/store/6/2/2/8/7/1/index.htt
doi: 10.1016/j.jenvman.2020.111433

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24 Zhao, C., Ju, P., Wang, S., Zhang, Y., Min, S., Qian, X.

One-step hydrothermal preparation of TiO_2/RGO/$Ni(OH)_2$/NF electrode with high performance for supercapacitors

(2016) *Electrochimica Acta*, 218, pp. 216-227. Cited 46 times.
http://www.journals.elsevier.com.proxy.undip.ac.id:2048/electrochimica-acta/
doi: 10.1016/j.electacta.2016.09.122

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Issue 1 (January) 2022

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A Novel Approach to Design High Resistive Polymer Electrolytes Based on PVC: Electrochemical Impedance and Dielectric Properties
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Review on Proton Exchange Membrane Fuel Cell's Metallic Bipolar Plate Fabrication Challenges
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The Characterisation of MWCNT-rGO-TiO_2 Nanocomposite as Potential Electrode Material for Hybrid Supercapacitor
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Corrosion Behavior of Zinc-Aluminum-Magnesium Coated Steel in Simulated Marine Atmosphere
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Corrosion failure analysis of duplex stainless steel in marine environment
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Investigation of Q235 low-carbon steel corrosion under simulated ballast water tank conditions

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Voltammetric Behaviour of an Electroactive of Zn^{2+} - octa(aminopropyl)silsesquioxane nanocoposite : An Application to 4-Chlorophenol Detection in Tap Water

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This paper presents the voltammetric behavior of electroactive metallosilsesquioxane and their use in the detection of 4-CP. The metallosilsesquioxane was synthesized in two steps. First by direct reaction between hydrochloride octa(aminopropyl)silsesquioxane (POSS-$NH_3^+Cl^-$) and Zn^{2+} a second by electrostatic interaction with $[FeCN_6]^{4-}$ (SZnFe). The nanostructured material showed a well-defined three redox couples with formal potential ($E^{0'}$) of approximately 0.33, 0.78 and 1.01 ± 0.01V (*vs* Ag/AgCl). Voltammetric analysis showed that the formal potential ($E^{0'}$) strongly depends on concentration and electrolyte type, but the system remained unchanged with pH values between 2 and 8. The SZnH graphite paste electrode exhibits a sensitive and catalytic oxidation response for the detection of 4-CP. For detection of 4-CP, the modified graphite paste electrode had a linear range of 6.0×10^{-7} to 6.0×10^{-5} mol L^{-1} with a limit of detection of 5.3×10^{-6} mol L^{-1} and a sensitivity of 0.53 A/ mol L^{-1}. This electrode could be used to detect 4-CP in tap water.

Keywords: Metallosilsesquioxane; Octa(aminopropyl)silsesquioxane; Prussiam blue analogs; Voltammetry; Graphite Paste Electrode; 4-Chlorophenol.

1. INTRODUCTION

Research in advanced polymers, composites and nanostructured materials has collaborated to the development of new materials for technological application in recent years, constituting a research center that attracts researchers from other fields of knowledge.

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Corrosion Behavior of Zinc-Aluminum-Magnesium Coated Steel in Simulated Marine Atmosphere

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The corrosion behavior of zinc-aluminum-magnesium (ZAM) coated steel in a simulated marine atmosphere was investigated using compositional, morphological, electrochemical, and mass loss analyses. The results revealed that the corrosion rate of ZAM coated steel fluctuated because of the corrosion products formed during its exposure to the marine atmosphere, and the mass loss after 1848 h of exposure was 27.37 $g \cdot m^{-2}$ after 1848 hours' exposure. The corrosion preferentially occurred in the eutectic phases, especially in the eutectic phases near the primary zinc phase and with an area smaller than the primary zinc phase. As the exposure time increased, some of the corrosion products flaked off from the coating, leading to the aggravation of local corrosion and the formation of corrosion pits. Moreover, the corrosion products in the corrosion pits were dissolved, which can be attributed to the decrease in pH caused by the consumption of hydroxides during the chemical reactions of the corrosion process.

Keywords: ZAM coated steel; atmospheric corrosion; mass loss; electrochemical measurements; corrosion pits

1. INTRODUCTION

The structural steel coated by galvanized coatings is widely used for home appliance and automotive applications. The elements of Al, Mg, Si were added to coatings in order to increase corrosion resistance and satisfy the requirements of manufacturing. ZAM coating, a novel coating developed from galvanized coating, has an excellent corrosion resistance and is being used in buildings,