DAFTAR PUSTAKA

Akca. E.. & Gürsel. A. (2015). A review on superalloys and IN718 nickel-based INCONEL superalloy. Periodicals of Engineering and Natural Sciences (PEN). 3(1).

Alhosseini. S. H. N.. & Mousavi. S. R. (2019). The Effect of Oxide. Carbide. Nitride and Boride Additives on Properties of Pressureless Sintered SiC: A Review. Journal of the European Ceramic Society. 39(7). 2215-2231.

Ali, N. K., Hashim, M. R., & Aziz, A. A. (2008). Pulse Current Electrochemical Deposition of Silicon for Porous Silicon Capping to Improve Hardness and Stability. Electrochemical and Solid-State Letters, 12(3), D11.

Alizadeh, M., & Cheshmpish, A. (2019). Electrodeposition of Ni-Mo/Al2O3 nano-composite coatings at various deposition current densities. *Applied Surface Science*, *466*, 433-440.

Andriyanti. W.. Prama. H. S.. & Priyantoro. D. (2017). Deposisi Lapisan Tipis Titanium Nitrida Pada Stainless Steel 316 Menggunakan Metode DC Sputtering.

Anggraeni. N. D. (2008). Analisa SEM (Scanning Electron Microscopy) dalam Pemantauan Proses Oksidasi Magnetite Menjadi Hematite. Seminar Nasional - VII Rekayasa dan Aplikasi Teknik Mesin di Industri. 50–56.

Aranzales, D., Wijenberg, J. H. O. J., & Koper, M. T. M. (2019). Voltammetric Study of TiN Electrodeposition on Polycrystalline Gold from Sulfuric and Methanesulfonic Acid. Journal of The Electrochemical Society, 166(8), D283.

Budi, E. (2016). Potensi Pembentukan Lapisan Super Dan Ultra Keras Senyawa Komposit Nitrida Menggunakan Kaidah Elektrodeposisi. *Spektra: Jurnal Fisika Dan Aplikasinya*, *1*(2), 187-194.

Budi, E., Fathia, N., Indrasari, W., & Sugihartono, I. (2019, October). Structure and mechanical properties of electrodeposited Ni-AlN/Si3N4 composite coating. In *Journal of Physics: Conference Series* (Vol. 1317, No. 1, p. 012050). IOP Publishing.

Budi, E., Oktaviani, Y., Fikry, A., Indrasari, W., Sugihartono, I., & Prayitno, T. B. (2020). Electrodepositing Ni-TiN/Si3N4 Composite Layer with Variation of Current Density. In *Key Engineering Materials* (Vol. 860, pp. 320-326). Trans Tech Publications Ltd.

Budi. E.. Ksatriotomo. B.. Restu. A.. Sugihartono. I.. & Budi. A. S. (2015). Komposisi Dan Morfologi Permukaan Lapisan Komposit Ni-TiAlN Elektrodeposisi. *SEMIRATA 2015*. *2*(1).

Budiantono. S.. Retnaningsih. S. M.. & Aksioma. D. F. (2016). Measurement System Analysis Repeatability dan Reproducibility (Gauge R&R) pada Alat Vickers Hardness Tester Di PT Jaykay Files Indonesia. *Jurnal Sains Dan Seni ITS*. *5*(2).

Burhanuddin. B. (2015). Teknologi dan rekayasa material polimer komposit. Prodi Teknik Arsitektur UIN Alauddin. ISBN 978-602-17519-1-6.

Callister Jr. W. D.. & Rethwisch. D. G. (2020). Materials science and engineering: an introduction. John wiley & sons.

Clegg. P. S.. Birgeneau. R. J.. Park. S.. Garland. C. W.. Iannacchione. G. S.. Leheny. R. L.. & Neubert. M. E. (2003). High-resolution x-ray study of the nematic–smectic-A and smectic-A–smectic-C transitions in liquidcrystal–aerosil gels. Physical Review E. 68(3). 031706.

Cooke. K. O. (2016). Parametric Analysis of Electrodeposited Nano-Composite Coatings for Abrasive Wear Resistance. Electrodeposition of composite materials

Cullity. B. D.. & Smoluchowski. R. (1957). Elements of X-ray Diffraction. Physics Today. 10(3). 50-50.

Devega. M.. & Dahlan. D. (2015). Rancang Bangun Alat Pembangkit Arus Pulsa Berbasis Mikrokontroler ATmega8535 untuk Proses Elektrodeposisi. *Jurnal Fisika Unand*. *4*(3).

Ding. H.. Ibrahim. R.. Cheng. K.. & Chen. S. J. (2010). Experimental study on machinability improvement of hardened tool steel using two dimensional vibration-assisted micro-end-milling. International Journal of Machine Tools and Manufacture. 50(12). 1115-1118.

Diwan. M. H.. Kadem. W. M.. & Jasim. A. N. (2020). The Effectof pH on the Structural Properties of Crystalline Alpha Alumina Powders Synthesized by Co-Precipitation Method.

Doğan, F., Uysal, M., Duru, E., Akbulut, H., & Aslan, S. (2020). Pulsed electrodeposition of Ni-B/TiN composites: effect of current density on the structure, mechanical, tribological, and corrosion properties. Journal of Asian ceramic societies, 8(4), 1271-1284. https://doi.org/10.1080/21870764.2020.1840704

Doğan. F.. Duru. E.. Akbulut. H.. & Aslan. S. (2023). How the duty cycle affects wear and corrosion: A parametric study in the Ni–B–TiN composite coatings. *Results in Surfaces and Interfaces*. *11*. 100112.

Erdoğan, N. N., & Başyiğit, A. B. (2023). An Approach on Determining MicroStrain and Crystallite Size Values of Thermal Spray Barrier Coated Inconel 601 Super Alloy. The International Journal of Materials and Engineering Technology, 6(1), 21-25.

Ezugwu. E. O. (2005). Key improvements in the machining of difficult-to-cut aerospace superalloys. International Journal of Machine Tools and Manufacture. 45(12-13). 1353-1367.

FADILAH. A. (2024). PENGARUH RAPAT ARUS PULSA TERHADAP PEMBENTUKAN DAN KARAKTERISASI LAPISAN KOMPOSIT Ni-TiN/Si_3N_4 DENGAN METODE ELEKTRODEPOSISI (Doctoral dissertation. UNIVERSITAS NEGERI JAKARTA).

Fathia, Nurul. (2018). Pembentukan Lapisan Komposit Ni-AlN/Si3N4 Menggunakan Metode Elektrodeposisi dengan Variasi Konsentrasi Si3N4. Skripsi. Universitas Negeri Jakarta. Jakarta.

Fathyunes. L.. Khalil-Allafi. J.. Sheykholeslami. S. O. R.. & Moosavifar. M. (2018). Biocompatibility assessment of graphene oxide-hydroxyapatite coating applied on TiO2 nanotubes by ultrasound-assisted pulse electrodeposition. *Materials Science and Engineering: C*. *87*. 10-21.

Fayomi, O. S. I., Ayodeji, S. A., Anyanwu, B. U., Nkiko, M. O., & Dauda, K. T. (2021). Effect of Electrodeposition Mechanism and α-Si3N4/ZrBr2 Doped Composite Particle on the Physicochemical and Structural Properties of Processed NiPZn Coatings on Mild Steel for Advance Application. In Key Engineering Materials (Vol. 900, pp. 61-73). Trans Tech Publications Ltd.

Fiqry. R.. Ariswan. A.. & Kuswanto. H. (2017). Struktur Kristal Dan Komposisi Kimia Semikonduktor Cd (Se0. 6Te0. 4) Hasil Preparasi Dengan Metode Bridgman. *Spektra: Jurnal Fisika dan Aplikasinya*. *2*(1). 75-82.

Ghaemi. M.. & Binder. L. (2002). Effects of direct and pulse current on electrodeposition of manganese dioxide. Journal of Power Sources. 111(2). 248-254.

Giurlani, W., Berretti, E., Innocenti, M., & Lavacchi, A. (2020). Measuring the thickness of metal films: A selection guide to the most suitable technique. *Materials Proceedings*, *2*(1), 12.

Goldstein. J. I.. Newbury. D. E.. Michael. J. R.. Ritchie. N. W.. Scott. J. H. J.. & Joy. D. C. (2017). Scanning electron microscopy and X-ray microanalysis. springer.

Gomes. A.. Fernández. B.. Pereira. I.. & Pereiro. R. (2011). Electrodeposition of metal matrix nanocomposites: improvement of the chemical characterization techniques. INTECH Open Access Publisher.

Gül, H., Kılıç, F., Aslan, S., Alp, A., & Akbulut, H. (2009). Characteristics of electro-co-deposited Ni–Al2O3 nano-particle reinforced metal matrix composite (MMC) coatings. *Wear*, *267*(5-8), 976-990.

Hakim, L., Dirgantara, M., & Nawir, M. (2019). Karakterisasi Struktur Material Pasir Bongkahan Galian Golongan C dengan Menggunakan X-Ray

Difraction (X-RD) di Kota Palangkaraya. Jurnal Jejaring Matematika dan Sains, 1(1), 44-51.

Han, S., Löhr, S. C., Abbott, A. N., Baldermann, A., Farkaš, J., McMahon, W., ... & Owen, M. (2022). Earth system science applications of next-generation SEM-EDS automated mineral mapping. Frontiers in Earth Science, 10, 956912. https://doi.org/10.3389/feart.2022.956912

Hashim. A.. & Hamad. Z. S. (2019). Developments in polymer nanocomposites for modern biomedical and industrial applications: A review. Research Journal of Agriculture and Biological Sciences. 14(2). 1–9. https://doi.org/10.22587/rjabs.2019.14.2.1

Hasudungan. S. E. (2022). Penyelesaian Sengketa Antara Indonesia Dengan Uni Eropa Perihal Larangan Ekspor Bijih Nikel Dalam Perspektif Hukum Perdagangan Internasional (Kasus Ekspor Bijih Nikel Dalam Perkara Nomor DS592) (Doctoral dissertation. Universitas Kristen Indonesia).

Hefnawy, A., Elkhoshkhany, N., & Essam, A. (2018). Ni–TiN and Ni-Co-TiN Composite Coatings for Corrosion Protection: Fabrication and Electrochemical Characterization. Journal of Alloys and Compounds, 735, 600-606.

Hessam, R., & Najafisayar, P. (2019). The effects of applied current density, bath concentration and temperature on the morphology, crystal structure and photoelectrochemical properties of electrodeposited hematite films. *International Journal of Hydrogen Energy*, *44*(41), 22851-22862.

Houssain, H., Islak, S., & Çalıgülü, U. (2023). Microstructure and Hardness Properties of Ni-Si3N4 Composite Materials Produced by Powder Metallurgy Method. *Kastamonu University Journal of Engineering and Sciences*, *9*(2), 67-72.

Jiang. M.. Ma. C.. Xia. F.. & Zhang. Y. (2016). Application of artificial neural networks to predict the hardness of Ni–TiN nanocoatings fabricated by pulse electrodeposition. *Surface and Coatings Technology*. *286*. 191-196.

Kalantary. M. R.. & Gabe. D. R. (1995). Physical properties of pulsed current copper electrodeposits. Journal of materials science. 30. 4515-4522.

Kartal. M.. Buyukbayram. I.. Alp. A.. & Akbulut. H. (2017). Production of pulse electrodeposited Ni-TiC nanocomposite coatings. Materials Today: Proceedings. 4(7). 6982-6989.

Kasturibai, S., & Kalaignan, G. P. (2014). Pulse Electrodeposition and Corrosion Properties of Ni–Si3N4 Nanocomposite Coatings. Bulletin of Materials Science, 37, 721-728.

Keller, Tom, Andrey Litnovsky, Georg Mauer, Christian Linsmeier, and Olivier Guillon. "Innovative tungsten coatings for an application in modern and future fusion devices." *Metals* 13, no. 3 (2023): 531.

Kumayasari. M. F.. & Sultoni. A. I. (2017). Studi Uji kekerasan Rockwell Superficial vs Micro Vickers. Jurnal Teknologi Proses dan Inovasi Industri. 2(2).

Kurniasih. Y. (2018). Pengembangan Metode Elektrodeposisi Untuk Pengambilan Kembali Perak Dari Limbah Fotorontgen. Indonesian Chemistry and Application Journal. 2(2). 12-18.

Kusumawati. L.. Budi. E.. & Sugihartono. I. (2019. December). Pengaruh Temperatur Terhadap Pembentukan Lapisan Komposit Ni-Tin/Si3n4 Dengan Menggunakan Metode Elektrodeposisi. In *Prosiding Seminar Nasional Fisika (E-Journal)* (Vol. 8. pp. SNF2019-PA).

Leidermark. D. (2008). Mechanical behaviour of single-crystal nickel-based superalloys (Master's thesis. Linköping University. Sweden). Retrieved from https://www.researchgate.net/publication/255498873

Łępicka. M.. Grądzka-Dahlke. M.. Pieniak. D.. Pasierbiewicz. K.. Kryńska. K.. & Niewczas. A. (2019). Tribological performance of titanium nitride coatings: A comparative study on TiN-coated stainless steel and titanium alloy. Wear. 422. 68-80.

Liao. H. T.. & Trung. L. M. (2012). Optimization on selective fiber laser sintering of metallic powder. Advanced Materials Research. 472–475. 2519–2530. https://doi.org/10.4028/www.scientific.net/AMR.472-475.2519

Liebgott, Q., Borroto, A., Fernández-Gutiérrez, Z., Bruyère, S., Mücklich, F., & Horwat, D. (2023). Deposition rate controls nucleation and growth during amorphous/nanocrystalline competition in sputtered Zr-Cr thin films. *Journal of Alloys and Compounds*, *936*, 168258.

Liu. K.. Wang. H.. Zhang. X.. Liu. K.. Wang. H.. & Zhang. X. (2020). Ductile mode cutting of tungsten carbide. Ductile Mode Cutting of Brittle Materials. 149-177.

Liu. S.. Li. Y.. Chen. P.. Li. W.. Gao. S.. Zhang. B.. & Ye. F. (2017). Residual stresses and mechanical properties of Si3N4/SiC multilayered composites with different SiC layers. Boletin de la Sociedad Espanola de Ceramica y Vidrio. 56(4). 147–154.

Ma, C., Yu, W., Jiang, M., Cui, W., & Xia, F. (2018). Jet pulse electrodeposition and characterization of Ni–AlN nanocoatings in presence of ultrasound. *Ceramics International*, *44*(5), 5163-5170.

Marwati. S. (2013). Pengaruh Agen Pereduksi dalam Proses Elektrodeposisi terhadap Kualitas Deposit Cu dan Ag. Jurnal Pendidikan Kimia Yogyakarta. 1-5.

Mascaretti. L.. Mancarella. C.. Afshar. M.. Kment. Š.. Bassi. A. L.. & Naldoni. A. (2023). Plasmonic titanium nitride nanomaterials prepared by physical vapor deposition methods. Nanotechnology. 34(50). 502003.

Masta. N. (2020). Buku materi pembelajaran scanning electron microscopy.

Maulana. A.. Budi. E.. & Prayitno. T. B. (2024). FABRIKASI LAPISAN KOMPOSIT NI-TIN PADA TUNGSTEN KARBIDA DENGAN METODE ELEKTRODEPOSISI RAPAT ARUS PULSA. PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL). 12(1). FA–207. https://doi.org/10.21009/03.1201.FA31

Maulida, A. B., Budi, E., & Prayitno, T. B. (2024, January). KARAKTERISASI MORFOLOGI DAN KOMPOSISI LAPISAN KOMPOSIT NI-TIN-ALN/SI3N4 DENGAN METODE ELEKTRODEPOSISI RAPAT ARUS PULSA. In *PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL)* (Vol. 12).

Mawardi. I.. Azwar. A.. & Rizal. A. (2017). Kajian perlakuan serat sabut kelapa terhadap sifat mekanis komposit epoksi serat sabut kelapa. Jurnal Polimesin. 15(1). 22-29.

Mita. F.. Jumarni. A.. Wati. R.. Patimah. A.. & Rahman. D. Y. (2024). Perkembangan Penerapan Nanoteknologi di Bidang Pelapisan (Coating). Jurnal Penelitian Fisika dan Terapannya (JUPITER). 5(2). 1-29.

Mohanavel, V., Ali, K. A., Prasath, S., Sathish, T., & Ravichandran, M. (2020). Microstructural and tribological characteristics of AA6351/Si3N4 60 composites manufactured by stir casting. Journal of Materials Research and Technology, 9(6), 14662-14672. https://doi.org/10.1016/j.jmrt.2020.09.128

Mulyanti. J. (2011). Pengaruh Temperatur Proses Aging Terhadap Karakteristik Material Komposit Logam Al-Sic Hasil Stircasting. *Jurnal Kompetensi Teknik*. *2*(2).

Mulyati. B. (2019). Tanin dapat dimanfaatkan sebagai inhibitor korosi. *Jurnal: Industri Elektro dan Penerbangan*. *8*(1).

Naat. J. N.. Tjahjanto. R. T.. & Maruroh. (2014). Pengaruh kecepatan putar deposisi terhadap struktur kristal. ketebalan. dan morfologi lapisan tipis timbal zirkonat titanat (PZT) dengan metode spin coater. *Chemical et Natura Acta*. 2(115-119).

Nasrun. M.. & Sujianto. S. (2020). Pembuatan dan pengujian sifat fisis dan sifat mekanik keramik alumina sebagai komponen mekanik. *Teknika: Jurnal Sains dan Teknologi*. *16*(2). 249-254.

Nugroho, F. (2017). Pengaruh Rapat Arus Anodizing Terhadap Nilai Kekerasan Pada Plat Aluminium Paduan Aa Seri 2024-T3. Angkasa: Jurnal Ilmiah Bidang Teknologi, 7(2), 39. https://doi.org/10.28989/angkasa.v7i2.14.

Nuryadin. B. W. (2020). Pengantar Fisika Nanomaterial: Teori dan Aplikasi.

Oktaviani. Y.. Budi. E.. & Sugihartono. I. (2018). Pengaruh Kuat Arus Terhadap Morfologi Permukaan Lapisan Komposit Ni-Tin/Si3N4 Dengan

Menggunakan Metode Elektrodeposisi. In Prosiding Seminar Nasional Fisika (E-Journal) (Vol. 7. pp. SNF2018-PA). https://doi.org/10.21009/03.SNF2018.02.PA.05

Permatasari. A. L.. Budi. E.. & Budi. A. S. (2015). Pengaruh Pengadukan pada Proses Pelapisan Ni-TiAlN Menggunakan Teknik Elektrodeposisi untuk Perlindungan Bahan Tungsten Karbida Terhadap Korosi. *PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL)*. *4*. SNF2015-VII. Retrieved from https://journal.unj.ac.id/unj/index.php/prosidingsnf/article/view/5187

Permatasari. A. L.. Sugihartono. I.. & Budi. A. S. (2018) Analisis Korosi Pada Lapisan Tipis Komposit Nikel-Nitrida Hasil Elektrodeposisi.

Piccinotti. D. (2018). Chalcogenide platforms for photonic metamaterials (Doctoral dissertation. University of Southampton).

Popovici. V.. Pavalache. A. C.. Vasile. M.. Voiculescu. I.. Stanciu. E. M.. & Pausan. D. (2014). Finite element method for simulating the Vickers Hardness Test. Applied Mechanics and Materials. 555. 419-424.

Puippe. J. C.. & Leaman. F. (Eds.). (1986). Theory and practice of pulse plating. Amer Electroplaters Soc.

Pusvitasari. J. (2018). Pengaruh Variasi HCl Pada Pemurnian Silika Berbasis Batu Apung.

Raghavendra. C. R. (2021). A Review on Ni Based Nano Composite Coatings. Materials Today: Proceedings. 6-16.

Rahman. D. K.. Budi. E.. & Nasbey. H. (2020. December). Kajian Pengaruh Variasi Temperatur Terhadap Struktur Kristal Berbagai Lapisan Komposit Nikel. In *PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL)* (Vol. 9. pp. SNF2020FA-119).

Rajendran. P. R.. Duraisamy. T.. Chidambaram Seshadri. R.. Mohankumar. A.. Ranganathan. S.. Balachandran. G.. ... & Renjith. L. (2022). Optimisation of HVOF Spray Process Parameters to Achieve Minimum Porosity and Maximum Hardness in WC-10Ni-5Cr Coatings. Coatings. 12(3). 339.

Ramadhyagita. Irsya Luthfiah. (2024). Pengaruh Variasi Rapat Arus Pulsa Terhadap Komposisi dan Struktur Morfologi Lapisan Komposit Nickel Silicon Nitride (Ni/Si_3N_4) Menggunakan Metode Elektrodeposisi. Skripsi. Universitas Negeri Jakarta. Jakarta.

Ramesh Kumar. C.. & Nagarajan. G. (2012). Performance and emission characteristics of a low heat rejection spark ignited engine fuelled with E20. Journal of mechanical science and technology. 26. 1241-1250.

Ramogayana. B.. Santos-Carballal. D.. Maenetja. K. P.. De Leeuw. N. H.. & Ngoepe. P. E. (2021). Density functional theory study of ethylene carbonate

adsorption on the (0001) surface of aluminum oxide α-Al2O3. ACS omega. 6(44). 29577-29587

Reddah, I., Ghelani, L., Touati, S., Lekmine, F., Hvizdoš, P., Devesa, S., & Boumediri, H. (2025). Experimental Investigation and Optimization of the Electrodeposition Parameters of Ni-Al2O3 Composite Coating Using the Taguchi Method. *Coatings*, *15*(4), 482.

Rishadi. M.. Budi. E.. & Sugihartono. I. (2023). PENGARUH RAPAT ARUS TERHADAP KOMPOSISI DAN MORFOLOGI PERMUKAAN LAPISAN KOMPOSIT NI-TIN DENGAN MENGGUNAKAN METODE ELEKTRODEPOSISI. PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL). 11(1). FA–83. https://doi.org/10.21009/03.1101.FA12

Rosyidan. C.. Maulani. M.. Samura. L.. & Ridaliani. O. (2022). Proses Pelapisan Nikel Diatas Al Dengan Metode Elektroplating. Jurnal Teori dan Aplikasi Fisika. 121-128.

Sajjadnejad. M.. Haghshenas. S. M. S.. Badr. P.. Setoudeh. N.. & Hosseinpour. S. (2021). Wear and tribological characterization of nickel matrix electrodeposited composites: A review. Wear. 486. 204098.

Sajjadnejad. M.. Haghshenas. S. M. S.. Badr. P.. Setoudeh. N.. & Hosseinpour. S. (2021). Wear and tribological characterization of nickel matrix electrodeposited composites: A review. Wear. 486. 204098.

Samlawi. A. K.. Arifin. Y. F.. & Permana. P. Y. (2018). Pembuatan dan karakterisasi material komposit serat ijuk (arenga pinnata) sebagai bahan baku cover body sepeda motor. *Info-teknik*. *18*(2). 289-300.

Sampson. A. R. 1996. Scanning Electron Microscopy: Advanced Research System.

Sandra. M.. Budi. E.. & Nasbey. H. (2020. December). PENGARUH VARIASI TEMPERATUR TERHADAP MORFOLOGI BERBAGAI LAPISAN KOMPOSIT: SEBUAH KAJIAN. In *PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL)* (Vol. 9. pp. SNF2020FA-13).

Santecchia. E.. Hamouda. A. M. S.. Musharavati. F.. Zalnezhad. E.. Cabibbo. M.. & Spigarelli. S. (2015). Wear resistance investigation of titanium nitride-based coatings. Ceramics international. 41(9). 10349-10379.

Saputra. R. R.. Oediyani. S.. Lestari. Y.. & Mabruri. E. (2017). Pengaruh Rapat Arus dan Waktu Pelapisan Nikel pada AISI 410 dengan Metode Pulse Electrodeposition terhadap Strukturmikro dan Laju Korosi [The Influences of Current Density and Time on Microstructure and Corrosion Rate Nickel Coating in Aisi 410 by Pulse Electro Deposition Method]. *Metalurgi*. *32*(2). 77-82.

Sebastyantito. A. B. I. M. (2019). Pengaruh Temperatur Elektrolit Dan Waktu Proses Elektroplating Kuningan Pada Baja Karbon Rendah Terhadap Daya Lekat. Surabaya Inst. Teknol. Sepuluh Nop.

Setiawan. A.. Nilasari. A. R.. & Ari. M. (2016). Analisis Sifat Mekanik Komposit Al 2075 Reinforcement Dengan Electroless Abu Dasar Batubara. *Journal of Research and Technology*. *2*(2). 64-71.

Sharma, P., Sharma, S., & Khanduja, D. (2015). Production and some properties of Si3N4 reinforced aluminium alloy composites. *Journal of Asian Ceramic Societies*, *3*(3), 352-359.

Singh, D. K., & Singh, V. B. (2012). Electrodeposition and Characterization of Ni–TiC Composite using N-Methylformamide Bath. Materials Science and Engineering: A, 532, 493-499.

Singh. P.. Harbola. M. K.. & Johnson. D. D. (2017). Better band gaps for wide-gap semiconductors from a locally corrected exchange-correlation potential that nearly eliminates self-interaction errors. Journal of Physics: Condensed Matter. 29(42). 424001.

Sujatno. A.. Salam. R.. Bandriyana. B.. & Dimyati. A. (2017. June). Studi scanning electron microscopy (SEM) untuk karakterisasi proses oxidasi paduan zirkonium. In Jurnal Forum Nuklir (Vol. 9. No. 1. pp. 44-50).

Suryana, N., Hidayat, S., & Nurhilal, O. (2021). Kajian Pengaruh Temperatur Sintering terhadap Peningkatan Derajat Kristalinitas Karbon dari Limbah Kulit Kemiri. *JIIF (Jurnal Ilmu dan Inovasi Fisika)*, *5*(2), 164-169.

Susan, D., Barmak, K., & Marder, A. (1997). Electrodeposited NiAl Particle Composite Coatings. Thin Solid Film, 307, 133-140.

Syahputra, A. R. (2015). Pengaruh Kuat Arus Terhadap Morfologi Mikro dan Struktur Kristal Lapisan Berbasis Nikel Menggunakan Teknik Elektrodeposisi. Jakarta: Universitas Negeri Jakarta

Tandri, C. (2021). Analisis Pengaruh Temperatur Elektrodeposisi Terhadap Struktur Kristal Lapisan Komposit Ni-TiN-AlN/Si3N4. DKI Jakarta, Indonesia: Universitas Negeri Jakarta.

Tidarriano, B. B., Suharno, K., & Mulyaningsih, N. (2019). PENGARUH WAKTU ELEKTROPLATING NIKEL TERHADAP KEKERASAN PADA TANGKI BAHAN BAKAR SEPEDA MOTOR. Jurnal Teknik Mesin MERC (Mechanical Engineering Research Collection), 2(2).

Tjahjanti. P. H. (2018). Buku Ajar Teori Dan Aplikasi Material Komposit Dan Polimer. *Umsida Press*. 1-24.

Tonelli, D., Scavetta, E., & Gualandi, I. (2019). Electrochemical deposition of nanomaterials for electrochemical sensing. *Sensors*, *19*(5), 1186.

Topayung. D. (2011). Pengaruh arus listrik dan waktu proses terhadap ketebalan dan massa lapisan yang terbentuk pada proses elektroplating pelat baja. Jurnal Ilmiah Sains. 97-101.

Torkamani. A. D.. Velashjerdi. M.. Abbas. A.. Bolourchi. M.. & Maji. P. (2021). Electrodeposition of Nickel matrix composite coatings via various Boride particles: A review. Journal of Composites and Compounds. 3(7). 106-113.

Vanrenterghem. B.. Bele. M.. Zepeda. F. R.. Šala. M.. Hodnik. N.. & Breugelmans. T. (2018). Cutting the Gordian Knot of electrodeposition via controlled cathodic corrosion enabling the production of supported metal nanoparticles below 5 nm. Applied Catalysis B: Environmental. 226. 396-402.

Vennila. T.. Surakasi. R.. Raghuram. K. S.. Ravi. G.. Madhavarao. S.. Udagani. C.. & Sudhakar. M. (2022). Investigation on tensile behaviour of Al/Si3N4/sugarcane ash particles reinforced FSP composites. Materials Today: Proceedings. 59. 1266-1270.

Wang, P., Wang, S., Zou, Y., Zhu, J., He, D., Wang, L., & Zhao, Y. (2021). Novel nitride materials synthesized at high pressure. *Crystals*, *11*(6), 614.

Widodo. B.. & Subardi. A. (2019). Pengujian Sifat Mekanik dan Struktur Mikro Aluminium Matrix Composite (Amc) Berpenguat Partikel Silikon Karbida (SiC) dan Alumina (AL2O3). *Prosiding SENIATI*. *5*(2). 295-303.

Xia. F.. Li. C.. Ma. C.. Li. Q.. & Xing. H. (2021). Effect of pulse current density on microstructure and wear property of Ni-TiN nanocoatings deposited via pulse electrodeposition. *Applied Surface Science*. *538*. 148139.

Xia. F.. Yue. W.. Wang. J.. Liu. C.. Wang. F.. & Li. Y. (2015). Synthesis of Ni–TiN composite nanocoatings by magnetic pulse current deposition. *Ceramics International*. *41*(9). 11445-11448.

Yarlagadda. V.. Lin. G.. Chong. P. Y.. & Van Nguyen. T. (2015). High surface area carbon electrodes for bromine reactions in H2-Br2 fuel cells. Journal of The Electrochemical Society. 163(1). A5126.

Yousefi, E., Sharafi, S., & Irannejad, A. (2021). Microstructure, Tribological Behavior, and Magnetic Properties of Fe−Ni−TiO2 Composite Coatings Synthesized via Pulse Frequency Variation. Transactions of Nonferrous Metals Society of China, 31(12), 3800-3813.

Zainuri. M.. Siradj. E. S.. Priadi. D.. Zulfia. A.. & Darminto. D. (2010). Pengaruh Pelapisan Permukaan Partikel SiC dengan Oksida Metal terhadap Modulus Elastisitas Komposit Al/SiC. Makara Journal of Science. 12(2). 11.

Zellele. D. M.. Yar-Mukhamedova. G. S.. & Rutkowska-Gorczyca. M. (2024). A Review on Properties of Electrodeposited Nickel Composite Coatings: Ni-Al2O3. Ni-SiC. Ni-ZrO2. Ni-TiO2 and Ni-WC. *Materials*. *17*(23). 5715.

Zuchry. M.. & Magga. R. (2017). Analisis Laju Korosi Dengan Penambahan Pompa Pada Baja Komersil Dalam Media Air Laut. Jurnal mekanikal. 8(2). 737-740.