



DAFTAR PUSTAKA

- Abbas, Q., Shinde, P. A., Abdelkareem, M. A., Alami, A. H., Mirzaeian, M., Yadav, A., & Olabi, A. G. (2022). Graphene Synthesis Techniques and Environmental Applications. *Materials*, 15(21). <https://doi.org/10.3390/MA15217804>
- Altuwirqi, R. M. (2022). Graphene Nanostructures by Pulsed Laser Ablation in Liquids: A Review. *Materials* 2022, Vol. 15, Page 5925, 15(17), 5925. <https://doi.org/10.3390/MA15175925>
- Amendola, V., & Meneghetti, M. (2013). What controls the composition and the structure of nanomaterials generated by laser ablation in liquid solution? *Physical Chemistry Chemical Physics : PCCP*, 15(9), 3027–3046. <https://doi.org/10.1039/C2CP42895D>
- Bai, R. G., Muthoosamy, K., Manickam, S., & Hilal-Alnaqbi, A. (2019). Graphene-based 3D scaffolds in tissue engineering: Fabrication, applications, and future scope in liver tissue engineering. *International Journal of Nanomedicine*, 14, 5753–5783. <https://doi.org/10.2147/IJN.S192779>
- Barcikowski, S., Amendola, V., Marzun, G., Rehbock, C., Reichenberger, S., Zhang, D., & Gökce, B. (2016). *Handbook of Laser Synthesis of Colloids*. <https://doi.org/10.17185/DUEPUBLICO/41087>
- Bass, M., & Kar, A. (2003). Laser–Materials Interactions. In *Encyclopedia of Physical Science and Technology* (pp. 247–265). Elsevier. <https://doi.org/10.1016/B0-12-227410-5/00361-6>
- Beiser, L. (2005). Scanner Devices and Techniques. In *Unified Optical Scanning Technology*. John Wiley & Sons, Inc. <https://doi.org/10.1002/0471723738.CH4>
- Bonaccorso, F., Colombo, L., Yu, G., Stoller, M., Tozzini, V., Ferrari, A. C., Ruoff, R. S., & Pellegrini, V. (2015). Graphene, related two-dimensional crystals, and hybrid systems for energy conversion and storage. *Science*, 347(6217). <https://doi.org/10.1126/SCIENCE.1246501> ASSET/F43DC9DE-35A1-4E26-B700-818C38EE1489/ASSETS/GRAPHIC/347_1246501_FA.JPG
- Boyko, E. V., & Smovzh, D. V. (2019). Morphology and optical properties of films based on CVD graphene and nanostructured gold. *Journal of Physics: Conference Series*, 1359(1). <https://doi.org/10.1088/1742-6596/1359/1/012100>
- Chen, Y. C., Lin, W. H., Tseng, W. S., Chen, C. C., Rossman, G. R., Chen, C. D., Wu, Y. S., & Yeh, N. C. (2020). Direct growth of mm-size twisted bilayer graphene by plasma-enhanced chemical vapor deposition. *Carbon*, 156, 212–224. <https://doi.org/10.1016/J.CARBON.2019.09.052>



- Childres, I., Jauregui, L. A., Park, W., Cao, H., & Chen, Y. P. (2013). *RAMAN SPECTROSCOPY OF GRAPHENE AND RELATED MATERIALS*.
- Chung, D. D. L. (2002). Review: Graphite. *Journal of Materials Science*, 37(8), 1475–1489. <https://doi.org/10.1023/A:1014915307738/METRICS>
- Dimiev, A. M., & Tour, J. M. (2014). Mechanism of graphene oxide formation. *ACS Nano*, 8(3), 3060–3068. https://doi.org/10.1021/NN500606A/SUPPL_FILE/NN500606A_SI_001.PDF
- Dittrich, S., Barcikowski, S., & Gökce, B. (2021). Plasma and nanoparticle shielding during pulsed laser ablation in liquids cause ablation efficiency decrease. *Opto-Electronic Advances*, 4(1), 1–13. <https://doi.org/10.29026/oea.2021.200072>
- Duma, V.-F. (2019). Laser scanners with oscillatory elements: Design and optimization of 1D and 2D scanning functions. *Applied Mathematical Modelling*, 67, 456–476. <https://doi.org/10.1016/j.apm.2018.11.001>
- Garcia-Lechuga, M., & Grojo, D. (2021). Simple and robust method for determination of laser fluence thresholds for material modifications: an extension of Liu's approach to imperfect beams. *Open Research Europe*, 1, 7. <https://doi.org/10.12688/OPENRESEUROPE.13073.2>
- Garnov, S., & Pashinin, V. P. (2004). Microsecond Laser Material Processing at 1.06 mm. *Laser Physics*, 14(6), 910–915. <https://www.researchgate.net/publication/293483353>
- Gebreegziabher, G. G., Asemahegne, A. S., Ayele, D. W., Dhakshnamoorthy, M., & Kumar, A. (2019). One-step synthesis and characterization of reduced graphene oxide using chemical exfoliation method. *Materials Today Chemistry*, 12, 233–239. <https://doi.org/10.1016/J.MTCHEM.2019.02.003>
- Gu, X., Zhao, Y., Sun, K., Vieira, C. L. Z., Jia, Z., Cui, C., Wang, Z., Walsh, A., & Huang, S. (2019). Method of ultrasound-assisted liquid-phase exfoliation to prepare graphene. *Ultrasonics Sonochemistry*, 58, 104630. <https://doi.org/10.1016/J.ULTSONCH.2019.104630>
- Hoffman, J., Chrzanowska, J., Kucharski, S., Moscicki, T., Mihailescu, I. N., Ristoscu, C., & Szymanski, Z. (2014). The effect of laser wavelength on the ablation rate of carbon. *Applied Physics A: Materials Science and Processing*, 117(1), 395–400. <https://doi.org/10.1007/S00339-014-8506-0/FIGURES/5>
- Hollas, J. M. (John M. (2004). Modern spectroscopy / J. Michael Hollas. In *Modern spectroscopy*. J. Wiley.
- Htwe, Y. Z. N., Chow, W. S., Suda, Y., Thant, A. A., & Mariatti, M. (2019). Effect of electrolytes and sonication times on the formation of graphene using an electrochemical exfoliation process. *Applied Surface Science*, 469,



951–961. <https://doi.org/10.1016/j.apsusc.2018.11.029>

ISO/TC 24/SC 4 Particle characterization. (2017). *ISO 22412:2017 - Particle size analysis — Dynamic light scattering (DLS)* (2nd ed.). International Organization for Standardization. <https://www.iso.org/standard/65410.html>

Kanitz, A., Kalus, M. R., Gurevich, E. L., Ostendorf, A., Barcikowski, S., & Amans, D. (2019). Review on experimental and theoretical investigations of the early stage, femtoseconds to microseconds processes during laser ablation in liquid-phase for the synthesis of colloidal nanoparticles. *Plasma Sources Science and Technology*, 28(10). <https://doi.org/10.1088/1361-6595/ab3dbe>

Khoei, A. R., & Khorrami, M. S. (2016). Mechanical properties of graphene oxide: A molecular dynamics study. *Fullerenes Nanotubes and Carbon Nanostructures*, 24(9), 594–603.
<https://doi.org/10.1080/1536383X.2016.1208180>

Kim, K. S., Zhao, Y., Jang, H., Lee, S. Y., Kim, J. M., Kim, K. S., Ahn, J. H., Kim, P., Choi, J. Y., & Hong, B. H. (2009). Large-scale pattern growth of graphene films for stretchable transparent electrodes. *Nature 2009* 457:7230, 457(7230), 706–710. <https://doi.org/10.1038/nature07719>

Lim, L. P., Juan, J. C., Huang, N. M., Goh, L. K., Leng, F. P., & Loh, Y. Y. (2020). Effect of graphene oxide particle size on the tensile strength and stability of natural rubber graphene composite. *Materials Science and Engineering: B*, 262, 114762. <https://doi.org/10.1016/J.MSEB.2020.114762>

Liu, F., Wang, C., Sui, X., Riaz, M. A., Xu, M., Wei, L., & Chen, Y. (2019). Synthesis of graphene materials by electrochemical exfoliation: Recent progress and future potential. *Carbon Energy*, 1(2), 173–199.
<https://doi.org/10.1002/CEY2.14>

Liu, M., Zhang, X., Wu, W., Liu, T., Liu, Y., Guo, B., & Zhang, R. (2019). One-step chemical exfoliation of graphite to ~100% few-layer graphene with high quality and large size at ambient temperature. *Chemical Engineering Journal*, 355, 181–185. <https://doi.org/10.1016/J.CEJ.2018.08.146>

Lotya, M., Rakovich, A., Donegan, J. F., & Coleman, J. N. (2013). Measuring the lateral size of liquid-exfoliated nanosheets with dynamic light scattering. *Nanotechnology*, 24(26), 265703. <https://doi.org/10.1088/0957-4484/24/26/265703>

Mahdian Asl, P., & Dorranian, D. (2016). Effect of liquid medium temperature on the production rate and quality of graphene nanosheets produced by laser ablation. *Optical and Quantum Electronics*, 48(12).
<https://doi.org/10.1007/s11082-016-0793-6>

Muñoz, R., Martínez, L., López-Elvira, E., Munuera, C., Huttel, Y., & García-Hernández, M. (2018). Direct synthesis of graphene on silicon oxide by low



temperature plasma enhanced chemical vapor deposition. *Nanoscale*, 10(26), 12779–12787. <https://doi.org/10.1039/C8NR03210F>

Pires, L. F., Cássaro, F. A. M., Tech, L., Pereira, L. A. A., & Oliveira, J. A. T. de. (2020). Gamma ray attenuation for determining soil density: laboratory experiments for Environmental Physics and Engineering courses. *Revista Brasileira de Ensino de Física*, 42. <https://doi.org/10.1590/1806-9126-rbef-2019-0340>

Postolache, O., Girao, P., Pereira, M., & Ramos, H. (2003). *An IR turbidity sensor: design and application [virtual instrument]*. 535–539. <https://doi.org/10.1109/IMTC.2002.1006899>

Potter, K. S., & Simmons, J. H. (2021). Optical Materials. In *Optical Materials*. Elsevier. <https://doi.org/10.1016/B978-0-12-818642-8.01001-2>

Prakoso, B., Ma, Y., Stephanie, R., Hawari, N. H., Suendo, V., Judawisastra, H., Zong, Y., Liu, Z., & Sumboja, A. (2020). Facile synthesis of battery waste-derived graphene for transparent and conductive film application by an electrochemical exfoliation method. *RSC Advances*, 10(17), 10322–10328. <https://doi.org/10.1039/D0RA01100B>

Raman, C. V., Krishnan, K. S., Raman, C. V., & Krishnan, K. S. (1928). A New Type of Secondary Radiation. *Natur*, 121(3048), 501–502. <https://doi.org/10.1038/121501C0>

Sadeghi, H., Solati, E., & Dorranian, D. (2019). Producing graphene nanosheets by pulsed laser ablation: Effects of liquid environment. *Journal of Laser Applications*, 31(4). <https://doi.org/10.2351/1.5109424>

Semak, V. V., Gerakis, A., & Shneider, M. N. (2019). Measurement of temperature dependent absorption coefficient of water at 1064nm wavelength. *AIP Advances*, 9(8), 85016. <https://doi.org/10.1063/1.5085746/127779>

Smith, E., & Dent, G. (2005). *Modern Raman spectroscopy : a practical approach*. J. Wiley.

Stevenson, R. L. (1999). Implementation of Beam-Steered Laser Marking of Coated and Uncoated Plastics. *Technical Papers, Regional Technical Conference - Society of Plastics Engineers*, 309–315. <https://doi.org/10.1016/B978-188420778-5.50040-1>

Szunerits, S., & Boukherroub, R. (2018). Near-Infrared Photothermal Heating With Gold Nanostructures. *Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry*, 500–510. <https://doi.org/10.1016/B978-0-12-409547-2.13228-7>

Tabatabaie, N., & Dorranian, D. (2016). Effect of fluence on carbon nanostructures produced by laser ablation in liquid nitrogen. *Applied Physics A: Materials Science and Processing*, 122(5).



<https://doi.org/10.1007/s00339-016-0091-y>

Thao, N. T. P., Ton-That, L., Dang, C. T., & Nedoma, J. (2022). Detailed Investigation of Factors Affecting the Synthesis of SiO₂@Au for the Enhancement of Raman Spectroscopy. *Nanomaterials* 2022, Vol. 12, Page 3080, 12(17), 3080. <https://doi.org/10.3390/NANO12173080>

THORLABS. (n.d.). *Pulsed Lasers Introduction to Power and Energy Calculations*.

Tiginyanu, I., Ursaki, V., & Popa, V. (2011). Ultra-thin membranes for sensor applications. *Nanocoatings and Ultra-Thin Films*, 330–354.
<https://doi.org/10.1533/9780857094902.2.330>

Wagener, P., Schwenke, A., Chichkov, B. N., & Barcikowski, S. (2010). Pulsed laser ablation of zinc in tetrahydrofuran: Bypassing the cavitation bubble. *Journal of Physical Chemistry C*, 114(17), 7618–7625.
https://doi.org/10.1021/JP911243A/SUPPL_FILE/JP911243A_SI_001.PDF

What is Raman Spectroscopy? - StellarNet, Inc. (n.d.). Retrieved September 21, 2023, from <https://www.stellarnet.us/what-is-raman-spectroscopy/>

Williams, D. (2008). Laser basics. *Anaesthesia & Intensive Care Medicine*, 9(12), 550–552. <https://doi.org/10.1016/j.mpaic.2008.09.008>

Worsfold, P. J. (2019). Spectrophotometry | Overview. *Encyclopedia of Analytical Science*, 244–248. <https://doi.org/10.1016/B978-0-12-409547-2.14265-9>

Wu, L., Li, W., Li, P., Liao, S., Qiu, S., Chen, M., Guo, Y., Li, Q., Zhu, C., & Liu, L. (2014). Powder, Paper and Foam of Few-Layer Graphene Prepared in High Yield by Electrochemical Intercalation Exfoliation of Expanded Graphite. *Small*, 10(7), 1421–1429.
<https://doi.org/10.1002/SMLL.201302730>

Yazdi, G. R., Iakimov, T., & Yakimova, R. (2016). Epitaxial Graphene on SiC: A Review of Growth and Characterization. *Crystals* 2016, Vol. 6, Page 53, 6(5), 53. <https://doi.org/10.3390/CRYST6050053>

Yazdi, G. R., Vasiliauskas, R., Iakimov, T., Zakharov, A., Syväjärvi, M., & Yakimova, R. (2013). Growth of large area monolayer graphene on 3C-SiC and a comparison with other SiC polytypes. *Carbon*, 57, 477–484.
<https://doi.org/10.1016/J.CARBON.2013.02.022>

Zhao, X., Deng, X., Li, M., Wang, Y., Mao, K., Yang, Y., & Zhang, M. (2021). Preparation of large area graphene on SiC(0 0 0 –1) by moderate vacuum technology. *Journal of Crystal Growth*, 555, 125968.
<https://doi.org/10.1016/J.JCRYSGRO.2020.125968>

Zhigilei, L. V., & Garrison, B. J. (2000). Microscopic mechanisms of laser ablation of organic solids in the thermal and stress confinement irradiation regimes. *Journal of Applied Physics*, 88(3), 1281–1298.



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NANOSHEETS DENGAN METODE
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<https://doi.org/10.1063/1.373816>

Zohuri, B. (2016). Atmospheric Propagation of High-Energy Laser Beams. In *Directed Energy Weapons* (pp. 379–414). Springer International Publishing.
https://doi.org/10.1007/978-3-319-31289-7_8