

DAFTAR PUSTAKA

- Abualroos, N. J., Azman, M. N., Baharul Amin, N. A., & Zainon, R. (2023). Radiation attenuation effectiveness of polymer-based radiation shielding materials for gamma radiation. *Radiation Physics and Chemistry*, 203, 110637.
- Almutery, A., Rahman, W. N., Mohamed, F., Hua, C. C., Abdul Razak, K., Ab Rashid, R., Rilwan, U., Sayyed, M. I., & Maghrbi, Y. (2025). Enhancing the gamma radiation shielding performance: The impact of Bi₂O₃ and MgO nanoparticles on PMMA. *Radiation Physics and Chemistry*, 237, 113070.
- Alsaab, A. H., & Zeghib, S. (2023). Analysis of X-ray and gamma ray shielding performance of prepared polymer micro-composites. *Journal of Radiation Research and Applied Sciences*, 16(4), 100708.
- Alsaif, N. A. M., Al-Ghamdi, H., Elsad, R. A., Shams, M. S., El-Shorbagy, M. A., Abouhaswa, A. S., Rammah, Y. S., & Shaaban, S. M. (2023). PVC doped with Ni_{0.5}Pb_{0.5}Fe₂O₄ spinel ferrites nanoparticles: Fabrication, structural, optical, and radiation shielding properties. *Radiation Physics and Chemistry*, 212, 111145.
- Attix, F. H. (2004). *Introduction to Radiological Physics and Radiation Dosimetry*. John Wiley & Sons, Inc.
- Bushberg, J. T., Seibert, J. A., Leidholdt, E. M., & Boone, J. M. (2012). *The Essential Physics of Medical Imaging* (3rd ed.). Lippincott Williams & Wilkins.
- Callister, W. D., & Rethwisch, D. G. (2014). *Materials Science and Engineering: An Introduction*. Wiley & Sons, Inc.
- Çogalmış, F. T., Şenkal, B. F., Kahraman, D. A., Pozan Soylu, G. S., Reyhancan, İ. A., Şahin, Ö., Küçük, D., Esen, A. N., Hacıyakupoglu, S., Durmayaz, A., & Ünlü, C. (2026). A lead-free alternative for gamma-ray shielding: Newly developed BiVO₄-doped polyaniline composites. *Applied Radiation and Isotopes*, 241, 112379.

- El-Bahnasy, S. S., Khalaf, M., Ayad, D. M., & Menazea, A. A. (2024). A green approach to improve antibacterial properties of PVC/PVDF film doped by silver nanoparticles via nanosecond laser ablation for wound healing application. *Scientific Reports*, 14, 27926.
- Habeeb, M. A., & Kadhim, W. K. (2025). Fabrication and exploring the morphological, structural, dielectric and linear/nonlinear optical characteristics of PMMA/Fe₂O₃-SiO₂ nanocomposites for promising optoelectronics and radiation attenuation applications. *Materials Chemistry and Physics*, 339, 130812.
- Hubbell, J. H., & Seltzer, S. M. (1995). *Tables of X-Ray Mass Attenuation Coefficients and Mass Energy-Absorption Coefficients*. National Institute of Standards and Technology.
- Ihsani, R. N., Gareso, P. L., & Tahir, D. (2024). An overview of gamma radiation shielding: Enhancements through polymer-lead (Pb) composite materials. *Radiation Physics and Chemistry*, 218, 111619.
- Kaew-on, C., Yuennan, J., Tohluebaji, N., Channuie, P., Ruangdit, S., Samran, R., Tochomphoo, T., & Siri, R. (2025). Enhanced hydrophobicity, thermal stability, and X-ray shielding efficiency of BaSO₄/P(VDF-HFP) nanocomposites for advanced lead-free radiation protection. *Polymers*, 17(6), 723.
- Kassim, H., Aldawood, S., Prasad, S., Asemi, N. N., Aziz, A. A., & AlSalhi, M. S. (2024). Advanced polymeric matrix utilizing nanostructured bismuth and tungsten oxides for gamma rays shielding. *Heliyon*, 10(17), 37289.
- Katea, M. B., Aobiad, A. K., & Al-Alawy, I. T. (2025). Synthesis and characterization of PMMA-based nanocomposites doped with Bi₂O₃, MoO₃, B₂O₃, SiO₂, Na₂O and Fe₂O₃ for gamma radiation shielding. *Applied Radiation and Isotopes*, 226, 112252.
- Khalil, A., Bondouk, I. I., Allam, E. A., Nabil, I. M., Al-Abyad, M., Saudi, H., El-Taher, A., Mahmoud, M. E., & Amar, A. (2024). A binary composite material of nano polyaniline intercalated with nano-Fe₂O₃ for enhancing

- gamma-radiation-shielding properties: Experimental and simulation study. *Progress in Nuclear Energy*, 169, 105067.
- Khalil, M. M., Gouda, M. M., Abbas, M. I., Abd-Elzaher, M., & El-Khatib, A. M. (2024). Impact of nano Fe_2O_3 on radiation parameters of epoxy reinforced with nano carbon. *Scientific Reports*, 14, 73139.
- Knoll, G. F., 2010, *Radiation Detection and Measurement*, 4th ed., John Wiley & Sons, New York.
- Lewandowski, K., & Skórczewska, K. (2022). A brief review of Poly(Vinyl Chloride) (PVC) recycling. *Polymers*, 14(15), 3035.
- Lim, G. K., Wang, J., Ng, S. C., Chew, C. H., & Gan, L. M. (2024). Adsorption and structuration of PEG thin films: Influence of the substrate chemistry. *Polymers*, 16(9), 1283.
- Mansy, M. S., Ghobashy, M. M., & Aly, M. I. (2024). Enhancing gamma and neutron radiation shielding efficiency of LDPE/PVC polymers using cobalt, aluminum, and magnesium oxide fillers. *Radiation Physics and Chemistry*, 222, 111862.
- Marashdeh, M., Sallam, F. H., Mahmoud, K. A., Rashad, M., Sayyed, M. I., Akhdar, H., & Tharwat, M. (2025). Polymeric gamma rays shield promoted by ferrite nanoparticles synthesized with Ni and Zn cations. *Radiation Physics and Chemistry*, 232, 112617.
- More, C. V., Alsayed, Z., Badawi, M. S., Thabet, A. A., & Pawar, P. P. (2021). Polymeric composite materials for radiation shielding: A review. *Environmental Chemistry Letters*, 19, 2057–2090.
- Özdemir, H. G., Kaçal, M. R., & Akman, F. (2026). Analysis of gamma radiation shielding properties of ternary polymer composites fabricated with polyester resin/barite/tin. *Radiation Physics and Chemistry*, 241, 113491.
- Plangpleng, N., Charoenphun, P., Polpanich, D., Sakulkaew, K., Buasuwan, N., Onjun, O., & Chuamsaamarkkee, K. (2022). Flexible gamma ray shielding based on natural rubber/ BaSO_4 nanocomposites. *Radiation Physics and Chemistry*, 199, 110311.

- Rijavec, T., Kavkler, K., Župančič, K., Demšar, A., & Savić, A. (2022). Machine learning-assisted non-destructive plasticizer identification and quantification in historical PVC objects based on IR spectroscopy. *Scientific Reports*, 12, 4187.
- Salem, E. F., Khalil, W. F., El-Tayebany, R. A., & El-Hag Ali, A. (2025). Shielding characteristics of poly(vinyl chloride) polymer film reinforced with Bi₂O₃/Dy₂O₃ nanoparticles. *The European Physical Journal Plus*, 140, 1148.
- Sharmin, K., Rayhan, M. S., Habiba, U., & Dewan, M. W. (2025). Synthesis of PVC-PEG based bio-enhanced scaffolds modifying with SiO₂. *Hybrid Advances*, 100388.
- Stern, T. (2025). Deciphering the triple-peak C–O–C stretching FTIR absorbance consistently occurring in semicrystalline PEG. *Polymers*, 17(16), 2199.
- Stuart, B. (2004). *Infrared Spectroscopy: Fundamentals and Applications*. John Wiley & Sons, Ltd.
- Tahir, D., Heryanto, H., Saad, A. R., Yasir, M., Tjahjono, M., Saeed, S., & Rahim, F. A. (2022). Composites cement/BaSO₄/Fe₃O₄/CuO for improving X-ray absorption characteristics and structural properties. *Scientific Reports*, 12, 19169.
- Turhan, M. F., Akman, F., Kaçal, M. R., Polat, H., & Demirkol, İ. (2023). A study for gamma-ray attenuation performances of barite filled polymer composites. *Applied Radiation and Isotopes*, 191, 110568.
- Turner, J. E. (2007). *Atoms, Radiation, and Radiation Protection* (3rd ed.). Wiley-VCH.
- Xie, P., Ge, Y., Wang, Y., Zhou, J., Miao, Y., & Liu, Z. (2022). Mechanically enhanced nanocrystalline cellulose/reduced graphene oxide/polyethylene glycol electrically conductive composite film. *Nanomaterials*, 12(24), 4371.