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EDITORIAL

Editorial for *Characterization and Application of Nanomaterials* (Volume 6, Issue 2)

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Nanomaterials are a recently discovered type of material that is gaining importance and receiving a lot of attention from researchers. Due to their numerous advantages, scholars are studying nanoparticles extensively. The articles in this issue that discuss the various applications of nanoparticles are very interesting. The majority of these articles focus on the use of nanoparticles in the medical sector and their contributions to environmental protection.

Nano-biomaterials have a wide range of applications in the medical field, including medical antibacterial materials, medical intervention/implantation materials, tissue engineering, regenerative medical materials, medical diagnostic imaging contrast agents, cancer photothermal therapy/chemotherapy, drug-controlled release carriers, and more. These materials have excellent physical, chemical, and biological safety properties, making them highly beneficial[1]. Researchers have been studying nano-biomaterials for a long time due to their significant impact on social development and human health[2]. Cole et al.[3] have reported a simple, economical, and optimized hydrothermal synthesis process for the production of high-purity Ta-doped potassium titanate nanofibers. They aim to develop functional nanoscale bone tissue substitutes that can be utilized for the regeneration, replacement, or repair of diseased or damaged bone. Sanjay et al.[4] have explored the use of bioactive glass nanoparticles doped with antimicrobial compounds, including silver, zinc, and magnesium ions, for medical applications. According to these researchers, nano-biomaterials are essential for optimizing some medical solutions.

Nanoparticles play a significant role in protecting the environment. In a study by Kamyab et al.[5], the use of green resources from cardamom seeds and ginger peels was used to synthesize the ZnO-$CoFe_2O_4$ nanostructure by the oxygen evolution reaction (OER), which is environmentally friendly and serves as an effective electrochemical catalyst for the oxidation of water. Another study by Krishnan and Rajendran[6] demonstrated that hydrophilically modified mesoporous PS-MWCNT composites have rapid adsorption and desorption kinetics of xylene isomers, which can effectively remove toxic substances from the environment. Biju[7] also found that the

copper oxide/zinc oxide nanocomposite effectively reduced water pollution and protected human health by degrading dyes such as methyl red and methyl orange under UV and visible light. The application of nanomaterials in this field shows great potential for reducing the negative effects of toxic substances on the environment.

Based on historical and contemporary studies, it is evident that nanomaterials provide various benefits that significantly impact several sectors associated with social progress and human welfare. As a result, many academics continue to investigate the applications and qualities of nanomaterials that could be advantageous to human society.

Lastly, we express our deep appreciation to the authors for granting us permission to share their insightful ideas.

Conflict of interest

The author declares no conflict of interest.

References

1. What are the applications of nanotechnology in the industry? Available online: https://www.cdstm.cn/gallery/media/mkjx/qcyjswx_6431/202110/t20211025_1058080.html (accessed on 15 January 2024).
2. Newsijie. Nanobiomaterials have great potential for development in the medical field, and most research has not been commercialized. Available online: https://m.ofweek.com/medical/2022-03/ART-11106-8420-30554585.html#:~:text=%E7%BA%B3%E7%B1%B3%E7%94%9F%E7%89%A9%E6%9D%90%E6%96%99%E4%BA%A7%E5%93%81%E7%A7%8D%E7%B1%BB,%E5%85%B6%E7%A0%94%E7%A9%B6%E7%83%AD%E5%BA%A6%E4%B8%8D%E5%87%8F%E3%80%82 (accessed on 15 January 2024).
3. Cole P, Tian Y, Thornburgh S, et al. Hydrothermal synthesis of valve metal Ta-doped titanate nanofibers for potentially engineering bone tissue. *Characterization and Application of Nanomaterials* 2023; 6(2): 3606. doi: 10.24294/can.v6i2.3606
4. Sanjay SS, Yadav P, Asthana N, et al. An investigation on 45S5 nanobioactive glass using FTIR and Raman spectroscopy. *Characterization and Application of Nanomaterials* 2023; 6(2): 4152. doi: 10.24294/can.v6i2.4152
5. Kamyab A, Khojasteh MH, Asadpour-Zeynali K. An eco-friendly route for green synthesis of ZnO-$CoFe_2O_4$ nanoparticles from cardamom and ginger extract as an efficient electrochemical catalyst for water oxidation. *Characterization and Application of Nanomaterials* 2023; 6(2): 3182. doi: 10.24294/can.v6i2.3182
6. Krishnan MR, Rajendran V. Sulfonated mesoporous polystyrene-1D multiwall carbon nanotube nanocomposite as potential adsorbent for efficient removal of xylene isomers from aqueous solution. *Characterization and Application of Nanomaterials* 2023; 6(2): 3516. doi: 10.24294/can.v6i2.3516
7. Biju R. Photocatalytic degradation of organic dyes using transition metal based mixed metal oxide nanocomposite under different illumination. *Characterization and Application of Nanomaterials* 2023; 6(2): 3573. doi: 10.24294/can.v6i2.3573