Commentary
Volume 8:3, 2023

Journal of Nanosciences: Current Research

ISSN: 2572-0813 Open Access

Nanoparticles Have Been Utilized to Improve PMMA Froth Network Properties

Ervy Severt*

Department of Science, University of Dhaka, Dhaka, Bangladesh

Description

This ceramic nanomaterial was synthesized using the sol-gel process in an effort to investigate the thermal stability, structure, and morphology of the resulting nanoparticle powders. This was done in order to take advantage of the intriguing mechanical properties and thermal stability of TiO_2. This work focused on the thermal characterization and investigation of the nano composite xWt TiO_2/PP (x=0, 2.5, 5, 7.5 mol%). The obtained results demonstrated that the sphere is comprised of nanoparticles of 20-30 nm with excellent thermal stability of nano-TiO_2. The results of this study showed that the final thermal stability and crystallinity of the composite are affected by the TiO_2 molar ratio. The use of TiO_2 was found to be an efficient and very promising method for improving the thermal properties of the composite that was produced. The composite reinforced with 7.5 Wt% TiO_2 has the highest crystallinity (54.80%) and thermal degradation stability. Ceramics nano metric reinforced polymer composite is an important material for a variety of applications, including catalysis, solar cells, hydrogen production, and energy applications. This ceramic nanomaterial was synthesized using the sol-gel process in an effort to investigate the thermal stability, structure, and morphology of the resulting nanoparticle powders. This was done in order to take advantage of the intriguing mechanical properties and thermal stability of TiO_2. This work focused on the thermal characterization and investigation of the nano composite xWt% TiO_2/PP (x=0, 2.5, 5, 7.5 mol%). The obtained results demonstrated that the sphere is comprised of nanoparticles of 20-30 nm with excellent thermal stability of nano-TiO_2. The results of this study showed that the final thermal stability and crystallinity of the composite are affected by the TiO_2 molar ratio. The use of TiO_2 was found to be an efficient and very promising method for improving the thermal properties of the composite that was produced. Ceramics nano metric reinforced polymer composite is a significant material for catalysis, solar cells, hydrogen production, and energy applications, among other things. It has the highest degree of crystallinity (54.80%) and thermal degradation stability [1].

Due to their improved specific properties, polymer composite materials are attractive for a variety of technological applications. Polymer materials' physical and thermal behavior is influenced by their degree of crystallinity and thermal degradation. One strategy for developing novel nanomaterials for a variety of uses is to establish a correlation between their mechanical and structural properties.

The widespread use of composites in recent years has prompted the use of nanoparticles as reinforcement for enhancing thermal properties and interfacial bonding strength. Polypropylene has been used in a variety of applications due to its excellent chemical stability, according to a number of researchers. Due to its high stiffness, low processing temperature, and low density, it is utilized extensively in advanced technologies. In the present work, synthesis revealed the impact spherical anatase TiO_2 nanoparticles on the thermal performances of polypropylene resin DTA/TG, SEM, TEM and XRD analysis determined the thermal, structural and morphology behavior of the TiO_2 nanoparticles. In this research study, details of nano-composites synthesis were presented. MEB analysis revealed the nanoparticle dispersion in the nano composites. Thermal degradation stability and degree of crystallinity were observed using DSC and TG/DTG [2,3].

In such manner, nanocarbon nanoparticles have been utilized to improve PMMA froth network properties. Research has turned towards the consolidation of nanoparticles, for example, graphene, carbon nanotubes, nanoclay, and inorganic nanoparticles and so on in the PMMA network. Therefore, superior execution PMMA nanocomposite froths have been created. The unrivaled adaptability, warm solidness, mechanical vigor, electrical conductivity, detecting, capacitance, and radiation safeguarding properties of PMMA and nanofiller based nanocomposite froths are fitting for a few specialized applications. In this audit, progress in the plan, elements, and utilizations of PMMA nanocomposite froths has been advertised. High level PMMA nanocomposite froths have been repeated in a few wide running as well as promising application regions. The fate of PMMA nanocomposite froths depends on the plan of adjusted nanoparticle-based PMMA aerogels [4,5].

Acknowledgement

We thank the anonymous reviewers for their constructive criticisms of the manuscript. The support from ROMA (Research Optimization and recovery in the Manufacturing Industry), of the research council of Norway is highly appreciated by the authors.

***Address for Correspondence:** Ervy Severt, Department of Science, University of Dhaka, Dhaka, Bangladesh, Tel: 32423566824; E-mail:sever185@edu.in*

Received: 07 January, 2023, Manuscript No. JNCR-23-85866; **Editor assigned:** 10 January, 2023, PreQC No. JNCR-23-85866 (PQ); **Reviewed:** 25 January, 2023, QC No. JNCR-23-85866; **Revised:** 10 April, 2023, Manuscript No. JNCR-23-85866 (R); **Published:** 18 April, 2023, DOI: 10.37421/2572-0813.2023.8.162

Conflict of Interest

The author declares there is no conflict of interest associated with this manuscript.

References

1. Haldane, Andrew G, and Robert M May. "Systemic risk in banking ecosystems." *Nature* 469 (2011): 351-355.
2. Nambiar, Shruti and John TW Yeow. "Polymer-composite materials for radiation protection." *Appl Mater Interfaces* 4 (2012): 5717-5726.
3. Evans, Owen, Alfredo M Leone, Mahinder Gill and Paul Hilbers, et al. "Macroprudential indicators of financial system soundness. " *J Finance* (2000).
4. Kumar, Rajiv, Mir Irfan Ul Haq, Ankush Raina and Ankush Anand, et al. "Industrial applications of natural fibre-reinforced polymer composites–challenges and opportunities." *J Sustain Eng* 12 (2019): 212-220.
5. Gunatillake, Pathiraja A, Raju Adhikari and N Gadegaard. "Biodegradable synthetic polymers for tissue engineering." *Eur Cell Mater* 5 (2003): 1-16.

How to cite this article: Severt, Ervy. "Nanoparticles Have Been Utilized to Improve PMMA Froth Network Properties." *J Nanosci Curr Res* 8 (2023): 162.