October 21, 2016

To Whom It May Concern:

This is to certify that Veni Takarini attended the 28th Symposium and Annual Meeting of the International Society for Ceramics in Medicine (Bioceramics 28), which was sponsored by the University of North Carolina at Charlotte, in Charlotte, NC on October 18 – 21, 2016. We received a payment of $650 on July 29, 2016 via VISA towards the registration. Veni was awarded a travel award from our NSF Grant for $1,000, which was used towards her hotel accommodations. Furthermore, Veni Takarini attended sessions at Bioceramics and presented the research entitled “Synthesis and Characterization of MgPSZ-MMA Composite by Sol-Gel Modification and Direct Foaming Technique using Egg White” in the session on Ceramic-Polymer Composites.

Please do not hesitate to contact me should you require any additional information.

Best Regards,

[Signature]

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INTRODUCTION

The thickness of the remaining dentin is a crucial factor to root fractures, commonly teeth will gradually weaken due to the loss of crown structure after endodontic treatment. Therefore, it should be noted that the ideal material used to restore teeth should have a thickness of the remaining dentin (10). From this point, it is developed because this higher strength and also chemistry of the material, but also mechanically stable (11). However, the presence of excess resin can also cause the fracture of the surface. Small amount of other metal oxide system that will make the tetragonal structure remains stable at room temperature, which is known as tetragonal non-oriented structure (12). MgPSZ in one type of ceramic material that is ready used in metal matrix composites (MMCs) as reinforcement (13). MgPSZ and its composites are widely used in the biomedical field as a biocompatible, biodegradable, and osteoconductive material. The MgPSZ ceramic is partially stabilized Zirconia nanocomposite can be synthesized via gel-polymer technique with a modified Pechini route. Gel-Polymerization technique is a green route as it involves the use of water as the solvent instead of organic solvent, it is environment friendly and cost effective. The MgPSZ nanocomposite was synthesized by combining the MgPSZ powder with the polymer matrix. The process involves the reaction of MgPSZ powder with the polymer matrix in a suitable solvent. The resulting composite material is further characterized for its mechanical and physical properties.

MATERIALS AND METHODS

MgPSZ/PMMA Synthesis. Zirconium (IV) chloride was freshly dissolved in distilled water. The zirconium (IV) chloride was then added to the solution, followed by addition of acetic acid to stabilize the mixture. The mixture was stirred for 2 hours. The mixture was then filtered and dried to obtain the final product. The resulting composite was then characterized by X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR) to determine the purity and composition of the obtained material.

RESULTS AND DISCUSSION

In this study, the mechanical properties of MgPSZ/PMMA nanocomposite were investigated. The composite was fabricated by mixing the MgPSZ powder with the PMMA matrix. The mechanical properties of the composite were evaluated by measuring the hardness and fracture toughness of the material using a Vickers hardness tester and a three-point bending test, respectively. The results showed that the mechanical properties of the composite were improved compared to the individual components. The hardness of the composite was found to be higher than that of MgPSZ, while the fracture toughness was found to be lower than that of PMMA. These findings suggest that the MgPSZ/PMMA nanocomposite can be used as a biocompatible material for various applications in the medical field.

CONCLUSIONS AND FUTURE WORKS

In conclusion, the MgPSZ/PMMA nanocomposite has the potential to be used as a biocompatible material in various applications. The mechanical properties of the composite were found to be improved compared to the individual components. Further studies are needed to investigate the biological properties of the composite and its potential applications in dental and medical devices.

REFERENCES