

Paper ID	1570759254
Title	The Addition of Fluoride to the Eggshell-derived Hydroxyapatite: A Preliminary Study
Author	Vilasinee Uthayaphamornwat and Arissara Suksap (School of Engineering, King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand); Anak Khantachawana (King Mongkut's University of Technology Thonburi, Thailand); Mettaya Kitiwan (King Mongkut's I
Email	61011357@kmitl.ac.th

Abstract

Dental caries are one of the major oral health problems, which could be mitigated by addressing the dental defects. Hydroxyapatite (HA) is commonly used for tooth and bone replacement due to its similar properties as the native hard tissues. Natural sources with abundant availability, such as eggshells, could be used to synthesize HA. Moreover, with the presence of fluorine in HA, it was suggested that the performance of this material could be enhanced in terms of material stability and anti-caries properties. This preliminary study aims to compare two methods used to produce fluoride-added HA from eggshells, which are pH cycling and wet precipitation methods. The molecular structure, crystal structure, particle appearance and chemical compositions of the obtained samples were characterized. The results suggested that pH cycling has provided samples with higher fluorine content, more crystalline structure and less CO₃ than those obtained from wet precipitation method. Therefore, pH cycling method appears to be more suitable for further processing and characterization of the fluoride-added HA samples derived from eggshells.