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Hairul Abral, Genda J Putra, Mohammad Asrofi, Ji-Won Park, Hyun-Joong Kim

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## Effect of Vibration Duration of High Ultrasound Applied to Bio-composite While Gelatinized on its Properties

Hairul Abral<sup>a)\*</sup>, Genda J Putra<sup>a)</sup>, Mohammad Asrofi<sup>a)</sup>, Ji-Won Park<sup>b)</sup> and Hyun-Joong Kim<sup>b)</sup>

<sup>a)</sup>Department of Mechanical Engineering,  
Andalas University, 25163 Padang, Sumatera Barat, Indonesia

<sup>b)</sup>Laboratory of Adhesion & Bio-Composites,  
Program in Environmental Materials Science,  
Research Institute for Agriculture & Life Sciences,  
Seoul National University, Seoul 151-921, Republic of Korea

### ABSTRACT

This article reports effect of vibration duration of high ultrasound applied to bio-composite while gelatinized on its properties. The bio-composite consists of mixing of both the tapioca starch based bioplastic and oil palm empty fruit bunch (OPEFB) fibers with high volume fraction. Gelatinization of the bio-composite sample was poured into a rectangular glass mold placed then in an ultrasonic bath with 40 kHz, and 250 watt in different duration for 0, 15, 30, 60 min respectively. The results show that vibration during gelatinization has changed the characterisation of the bio-composite. SEM photograph displayed different fracture surface of tensile sample. For vibration duration of 60 min, tensile strength (TM), and tensile modulus (TM) was improved to 64.4, 277.4%, respectively, meanwhile strain was decreased to 35.1% in comparison without vibration. Fourier Transform Infrared Spectroscopy (FTIR), and XRD diffraction of the

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\* Address correspondence to Hairul Abral, Department of Mechanical Engineering, Andalas University, Padang, Indonesia. E-mail address: [abral@ft.unand.ac.id](mailto:abral@ft.unand.ac.id).

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