PEMBUATAN PERMUKAAN ULTRAHIDROFOBIK PADA BAMBU *DENDROCALAMUS ASPER*YANG DIMODIFIKASI OLEH TiO_2 DAN OKTA FLORO 1-PENTANOL (OFP)

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ABSTRACT

FABRICATIONOF ULTRAHYDROPHOBIC SURFACE ON *DENDROCALAMUS ASPER*BAMBOOMODIFIED BY TiO_2AND OCTA FLUORO 1-PENTANOL (OFP)

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The aim of this research is to prepareultrahidrophobic surface on *Dendrocalamus asper* bamboo by using hydrothermal method. The ultrahydrophobic surface formation was carried out in two stages: TiO_2 layer making on the bamboo surface and the formation of ultrahydrophobic surfaces on TiO_2 coated bamboo using of octa fluoro 1-pentanol (OFP) as surface modifier. The ultrahydrophobic surface is made by using the volume (mL) ratio of OFP and isopropanol solvent 5:20 (BT-OFP5); 10:15 (BT-OFP10); 15: 10 (BT-OFP15); 20: 5 (BT-OFP5). The result of the measurement of contact angle shows the best volume ratio between OFP and isopropanol is 10:15 (BT-OFP10) with the contact angle is 123^0. The result obtained was characterized using *X-Ray Diffraction* (XRD) which showed that anatase crystalline phase of TiO_2 was formed on bamboo. *The Scanning Electron Microscopy* (SEM) analysis shows the morphology of TiO_2 on the bamboo surface is spherical with the average particle size of 1.6 μm. In addition, mechanical and chemical tests, self-cleaning tests, and flammability tests are also performed. The result shows that ultrahydrophobic surfaces were successfully constructed with good mechanical properties, self-cleaning properties, and flame retardancy.

Keywords: Indonesian bamboo, self cleaning, ultrahydrophobic surface, anatase TiO_2, hydrothermal