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13th Joint Conference on Chemistry

7-8 September 2018
Semarang, Indonesia

Programme Booklet

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Diponegoro University

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Mesostructured cellular foam MCF-(9.2T-3D) silica as support for free α -amylase in liquefaction of tapioca starch

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Abstract

As ethanol can be made from insoluble starches, the liquefaction process of tapioca starch using α -amylase immobilised on the mesostructured cellular foam silica (MCF-(9.2T-3D) type) support was studied to observe characteristics of the process. The free α -amylase SQzyme BAP was immobilised directly onto the support where some variables were observed during the immobilisation process. The temperature and agitation speed developed low effects on the process, but the pH of buffer solution affected the process highly. The optimum enzyme immobilisation occurred at the temperature of 50°C, pH 6 and speed of 60-100 rpm giving the immobilisation efficiency of more than 80%. The liquefaction of the insoluble starch (tapioca) conducted with the immobilised α -amylase gave the maximum result of \pm 50% dextrose equivalent (DE). The experimental factors of buffer pH, temperature and agitation speed changed the DE value significantly, but concentration of immobilised enzyme and substrate slightly affected the hydrolysis process. The optimum operating conditions were obtained at pH 6.0, agitation speed of 100 rpm, immobilised enzyme concentration of 84.8 U, and temperature of 80°C.

Keywords: α -amylase, MCF (9.2T-3D) silica, Enzyme immobilisation, Tapioca starch, Enzymatic Hydrolysis





13th Joint Conference on Chemistry

Certificate of Presentation

This is to certify that

Joni Agustian

has presented a paper entitled

**Mesostructured Cellular Foam MCF-(9.2T-3D) Silica as
Support for Free α -Amylase in Liquefaction of Tapioca Starch**

at the 13th Joint Conference on Chemistry held on 7-8 September 2018 in
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Semarang, 8 September 2018

The Chair of

13th Joint Conference on Chemistry



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