



Porosity enhancement of biochar derived from rubber sawdust using steam injection at low temperature

Napat Kaewtrakulchai^{1*}, Apiluck Eiad-Ua², and Patrick Rousset¹

¹*The Joint Graduate School of Energy and Environment,
King Mongkut's University of Technology Thonburi, Thailand*

²*College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, Thailand*

*e-mail: knapat.kara@gmail.com

Biochar is extremely interesting for energy and environment applications such as soil amender, sorbent materials and biofuels. In this study, rubber sawdust (RS) was prepared through the pyrolysis at 400 and 600 °C with low and high heating rate (7 and 20 °C/min) for 60 minutes. The pyrolytic parameters have a strong influence on biochar properties. Biochar yield was decreased from 33.1 to 22.6 wt% due to increasing of pyrolytic temperature. The highest BET surface area of biochar previous enhanced porosity was found about 410 m²/g at 600 °C with 20 °C/min of heating rate with particle size 0.3-1 mm. Afterwards, biochar porosity was enhanced through the steam injection process. Furthermore, the physicochemical properties of biochar product (*i.e.* surface morphology, BET surface area, and N₂ adsorption isotherm) will be characterized.

Keywords: Biochar porosity; Steam injection; Rubber sawdust, Low pyrolytic temperature