

**Adsorption of ammonia nitrogen by jackfruit (*Artocarpus heterophyllus*) seeds:
Isotherms and kinetic modeling studies**

ABSTRACT

Ammonia nitrogen ($\text{NH}_3 - \text{N}$) is one of the common and toxic species of nitrogen and excess of it in waterway causes eutrophication, decreased in dissolved oxygen and toxic to aquatic organisms. This study aims to investigate the isotherm and kinetic modeling of adsorption of ammonia nitrogen from aqueous solution by using jackfruit (*Artocarpus heterophyllus*) seed. Batch equilibrium experiments were carried out at 60 minute of contact time with initial pH value of 7. The adsorption isotherm data fitted well with Langmuir model with correlation (R^2) of 0.9809 and maximum monolayer adsorption capacity (Q_e) of 3.94 mg/g. Meanwhile, the adsorption of $\text{NH}_3 - \text{N}$ follows pseudo second order with correlation (R^2) values ranges from 0.62 to 0.96 for various concentrations. Besides, the adsorption capacity obtained from experiment also has the smallest difference with calculated adsorption capacity. This suggest that the adsorption is mainly governed by chemical process involving cations sharing or exchange between the adsorbent and $\text{NH}_3 - \text{N}$ in the solution. In conclusion, jackfruit seed can be used as adsorbent materials for ammonia nitrogen removal from aqueous solution.