

Evaluation of cellulosic adsorbents by waste-to-product approach for remove organic matter in surface water

Nguyen Thuy Linh, Vietnam

A few hundred organic pollutants that have been found to contaminate water resources affects the health and well-being of people, especially in low-income and mountainous areas in Vietnam. Among the many methods of organic matter treatment the adsorption process using agricultural wastes is reasonably due to its easy use, flexibility, versatile design, low energy-requirements, high-performance and cost-effectiveness. The content of this project is to find a suitable agricultural waste source from local regions and the modification process to produce the adsorbent for the removal of organic matter in surface water.

Agricultural wastes in Vietnam are disposed with a large amount without treatment, or they are burned, which pollutes air, soil, water bodies and produces CO₂, enhances the greenhouse effect and climate change. A technology as proposed here may minimize waste, use energy efficiently and be friendly with the environment.

Agricultural wastes are lignocellulosic materials which consist of three main structural components (lignin, cellulose and hemicelluloses). To improve adsorption properties of cellulosic adsorbent, they will be modified using various methods which include acid or alkali treatment, etherification, esterification and other modification. Apart from, different regeneration techniques will be used for desorption study, which include thermal regeneration and chemical regeneration.