Equilibrium, Kinetic and Thermodynamic Properties of Adsorption of Brilliant Green onto
Coconut Shell-Based Granular Activated Carbon

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In this study, the adsorption behavior from solution of Brilliant Green were investigated through batch reaction using coconut shell based granular activated carbon.   Equilibrium adsorption data were fitted into Langmuir, Freundlich isotherms. Freundlich and Langmuir have similar concordances. From estimated Langmuir constant (R_L=0.3315~0.3808) and Freundlich constant (1/n=0.7653~0.9694),

this process could be employed as effective treatment for removal of Brilliant Green. When the temperature of Brilliant Green adsorption process of coconut shell based granular steam activated carbon was fixed at 298 K in the kinetic analysis, the concentration of the solution was changed to 10, 20, and 30 ppm, and pseudo-second order model was more suitable. In addition, when the concentration was fixed at 30 ppm, the temperature was changed to 298, 308, and 318 K. As a result of the analysis, pseudo-second order model was more suitable. The thermodynamic analysis also showed that this adsorption process occurs spontaneously as the temperature increases, and is a physical adsorption process by the change in Gibbs free energy.