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Removal of Water-Soluble Cationic Dyes with TriSyl Silicas

Erdener KARADAİ

Adnan Menderes University,

Chemistry Department, 09010 Aydın-TURKEY

Dursun SARAYDIN

Chemistry Department

Cumhuriyet University, 58140 Sivas-TURKEY

Fatma AYDIN

Mersin University,

Chemistry Department, 33000 Mersin-TURKEY

Abstract: In this study, the adsorption of certain water-soluble cationic dyes, (basic blue 9, basic blue 12, basic blue 17, brilliant cresyl blue, janus green B, basic green 4, basic violet 1, basic violet 3, and thionin) onto TriSyl silicas by batch adsorption at 25°C was investigated. In the adsorption experiments, Langmuir type adsorption in the Giles classification system was found. Binding parameters such as the initial binding constant (K_i), the equilibrium binding constant (K), monolayer coverage (n), site-size (u), maximum fractional occupancy ($\hat{\theta}$), and the thermodynamic parameter free energy of adsorption (ΔG) were calculated for TriSyl silica and cationic dye systems by using the linearization methods of Klotz and Langmuir.

Key words: TriSyl silicas, cationic dyes, binding, adsorption.

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