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TREATMENT OF TEXTILE WASTEWATER CONTAINING DYES

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Abstract – In recent years there has been an interest in the study of new methods for the removal of textile dyes from water due to its large-scale use in different industries. For example, paper printing, textile, leather, pharmaceutical, food or technological applications. It is estimated that more than 700 thousand tons of about 10 000 different types of dyes are produced annually. Most of them are of synthetic origin and can generate adverse effects, for example, teratogenic, mutagenic and carcinogenic action. Dyes are mainly applied in the textile industry, and they are usually classified into anionic (acid dyes), cationic (basic dyes) and non-ionic (disperse dyes) dyes. The direct discharge of dyes into the environment can cause various damages to plants and animals: dyes can block the penetration of sunlight, reduce the photosynthetic efficiency of aquatic plants and ultimately destroy the ecological balance of the aquatic ecosystem. This study determines the adsorption efficiency of congo red, methylene blue, rhodamine B and naphthol green B dyes used in textile industry by using the aerogel. To achieve the aim, the effects of adsorbent dosage, pH, dyes concentration, adsorption contact time and temperature of solutions were studied. Kinetic data, equilibrium isotherms and thermodynamic parameters were determined.

Keywords – *Circular economy; textile dyes; sorption; wastewater treatment*