

# Preparation and Characterization of Films from Giloy (*Tinospora Cordifolia*) for Dye Adsorption †

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**Abstract:** Giloy or *Tinospora Cordifolia* is considered an essential herbal plant in ayurvedic and folk medicine because of its broad-spectrum therapeutic properties. It is an herbaceous vine commonly grown in tropical India. The stem of Giloy has the most beneficial compounds, so it is being used for its immunomodulatory activity, and it has a very good adsorption capacity. Giloy stems were partially methylated using NaOH and CH<sub>3</sub>I. The resulting product was blended with polyvinyl alcohol in the presence of glycerol and glutaraldehyde to prepare an environmentally friendly film. The film was characterized by FTIR spectral, XRD, and SEM analyses to confirm the nature of interaction among its various components. This film was utilized as an efficient adsorbent to remove dye from aqueous solutions. Adsorption studies were carried out in 10-30 mg/L concentration range of dyes at 291, 301, and 311 K and pH 4, 7, and 9. The adsorption mechanism was analyzed by applying various kinetic and isotherm models. The film could find application for recycling water from industrial effluents.

**Keywords:** recycling of water; Giloy; dye adsorption.

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## Conflicts of Interest

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