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Silk fibroin/polyethyleneimine hydrogel for high performance removal of methyl blue from water

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The indiscriminate disposal of pigments poses serious threat to the environment and public health. These hazardous pollutant is often found to coexist in the industrial wastewater. Silk fibroin (SF) with nitrogen/oxygen-containing functional groups perceives a promising adsorbent to remove pollutants from wastewater. Herein, to achieve high removal efficiency of anionic pollutant, positively charged polyethyleneimine (PEI) was associated with SF to fabricate SF/PEI composite hydrogels. A typical cationic methyl blue (MB) dye was utilized as model pollutant to investigate the adsorption capability of the SF/PEI composite hydrogel from the aqueous solutions in an effective way. The SF/PEI composite hydrogel exhibited excellent adsorbability for MB (227.3 mg/g) at pH 5.5 compared to the neat SF hydrogel (17.9) because it prevents MB from interacting with the amine groups in the 3D structure of the SF/PEI composite hydrogel. The removal of MB using the SF/PEI composite hydrogels proves an effective and practical paradigm for the disposal of industrial wastewater contaminated by MB.

Biography

Chirag B Godiya has completed his PhD from the University of Camerino, Italy and currently is a Post-doctoral researcher in Southeast University, China. He has published more than 4 papers.

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