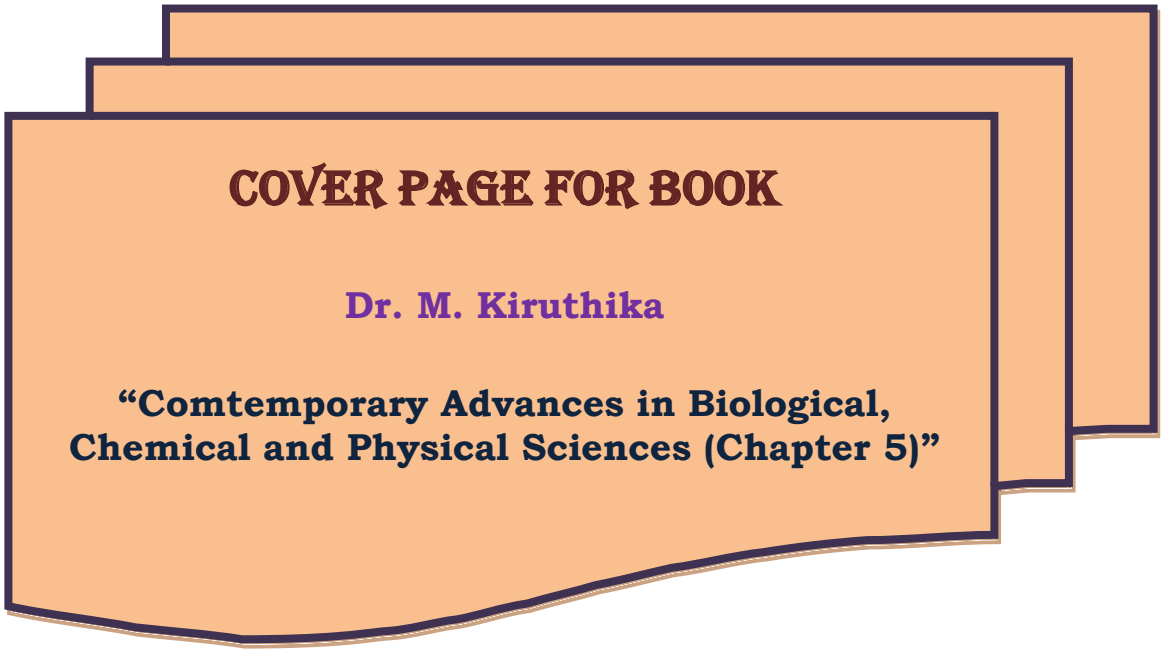
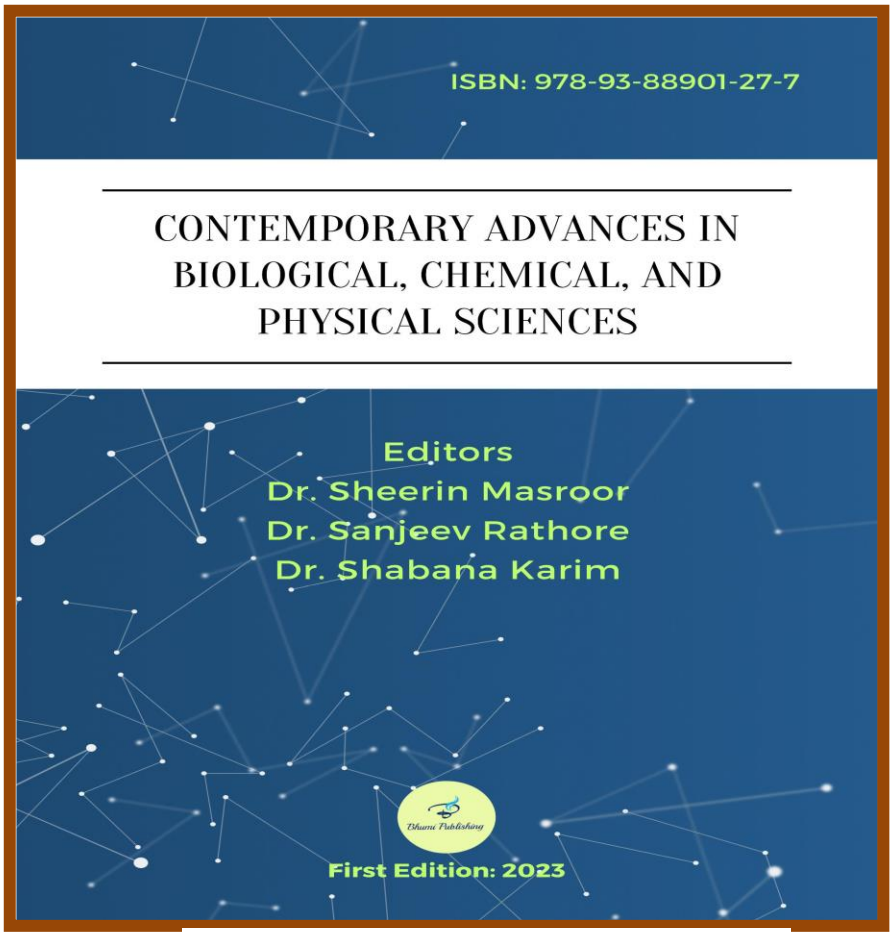
CRITERION III – RESEARCH, INNOVATIONS AND EXTENSION

3.4. RESEARCH PUBLICATION AND AWARDS

3.4.4 Number of Books and Chapters in Edited Volumes Published per Teacher



Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M. Kiruthika	Comtemporary advances in biological, chemical and physical sciences (Chapter 5)	2023	978 - 93 - 88901 - 27 - 7	Yes	Bhumi Publishing



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REMOVAL OF HEXAVALENT CHROMIUM [Cr (VI)] FROM AQUEOUS MEDIUM BY KOH ACTIVATED AERIAL ROOT OF FICUS BENGHALENSIS.L CARBON: ADSORPTION DYNAMICS AND EQUILIBRIUM STUDIES

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Abstract:

The present paper reports on the use of modified activated carbon as an environmental friendly adsorbent, obtained from aerial root of *Ficus Benghalensis*, for the removal of Cr (VI) from aqueous solution. The activated carbon was prepared from aerial root of *Ficus Benghalensis* by KOH treatment (FBPHAC). Batch studies revealed that the effects of different experimental parameters like pH, dose, contact time, initial ion concentration and temprature. The experimental data showed that the rapid capture of Cr (VI) ions onto FBPHAC is explained by Langmuir isotherm model. The Kinetic modelling showed that a pseudo second order model was suitable to describe the kinetic equilibrium data and suggesting a fast adsorption rate of Cr (VI) ion.

Introduction:

Contamination of water by toxic heavy metals through the discharge of industrial wastewater is a global environmental concern [1]. Numerous metals such as Sb, Cr (VI), Cd, Cu, Pb, Hg, etc., have toxic efects on mankind and environment [2]. Hexavalent Chromium is one among the mentioned toxic heavy metals essential to human life and health. In minute quantities, the metal is essential in maintaining the health of an individual, whereas excess of the same is carcinogenic. Prolonged exposure to Cr (VI) causes serious illness to human [3]. According to the WHO, its permissible level in surface water bodies is 0.05 mg/L and its concentration in industrial wastewaters varies from 0.5 to 270 mg/L. Lather, tanning, pigment, textile, wood preservation, chrome plating, cement and photography industries etc., are the major contributors of hexavalent chromium into the environment [4]. Hence, the treatment of contaminated water is the need of the hour. Chemical precipitation, membrane separations, ion exchange, solvent extraction, adsorption, electrodialysis and reverse osmosis are the existing methods for the treatment of industrial waste water. Among these techniques the adsorption is considerably effective due to the feasibility and applicability of low-priced sorbents. It has great potential in significantly reducing such environmental problems, increasing productivity and helping to remediate the environment [5].

Several low-cost adsorbents, such as agricultural wastes, industrial solid wastes, biomass, clays minerals and zeolites, are usually utilized for Cr (VI) removal [1].