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Session V: Colorants from renewables

Sustainable alternatives for Textile coloration



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Prof. Ravindra V. Adivarekar, FTA (honorary), B. Sc. (Tech), M. Sc. (Tech), Ph. D. (Tech) is presently serving as Dean (HR) and a Professor in Fibre Chemistry for last 25 years at the Institute of Chemical Technology with expertise in Textile processing.

Prof. Adivarekar has successfully guided 24 Doctoral students & 58 Master students. He has filed 3 patents out of which 2 have already been granted and published about 200 research papers in various journals of national and international repute and over 70 conference proceedings.

Prof. Adivarekar is a life member of Textile Association of India (TAI), Indian Fibre Society, Indian Natural Fibre Society and former Editor of Journal of Textile Association-TAI. His research areas of interests are Natural Dyes and Mordants, Textile Composites, Flame retardant textiles, Dyeing and printing of textile, Medical textiles, Production and extraction of Microbial Enzymes and Colourants for textile processing, etc.

Abstract

The utilization of synthetic colorants has increased many folds since their discovery. Along with their positive aspects, synthetic dyes have certain limitations which are causing havoc to the environment. Nearly 20% of global water pollution is related to textile coloration.

Currently, research is being carried out to minimize the negative environmental impact of synthetic dyes and chemicals through the sustainable alternative strategies using renewable agricultural biomass raw materials. The process of modifying the structure of natural colorants to meet the requirements of increasing needs and modern technology along with the sustainability of these products is being explored. Synthesising textile colorants through the fermentation process of agricultural waste products seems to be potential alternative. One of the future alternatives is the microbial source of colorants. Major benefits of microbial colorants include abundant availability, environmental stability, cost efficiency, less labour intensiveness, high yield, and ease of downstream processing. Functional dyes based on natural sources are another alternative for combined dyeing and finishing offering process sustainability with substantial savings in utilities. These dyes contain a functional group, along with chromophore and auxochrome for their functional properties which include anti-bacterial, UV protection, water repellency, mosquito repellency, etc.