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Session IV: Natural Dyes

Natural dyes - Innovation and upgradation of technology for industrial use

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Dr. Vankar completed her B.Sc. and M.Sc. in Chemistry from Christ Church College, Kanpur and earned her Ph.D. from IIT-Kanpur in 1987. She continued with the Chemistry Department at IIT-Kanpur as Research Associate and then proceeded for a one-year post-doctoral stint with Prof. R. R. Schmidt at University of Konstanz, Germany in 1990-91. She returned to IIT-Kanpur and was Senior Project Scientist in the Chemistry Department. She moved to the Facility for Ecological and Analytical Testing at IIT-Kanpur in 1996 and from 2005 to 2012 was Principal Research Scientist there. She is presently Consultant at IIT-Kanpur.

During her long association with IIT-Kanpur, Dr. Vankar developed protocols for testing of natural dyes by using analytical techniques such as HPLC, TLC, FT-IR , UV-Vis, Mass, NMR. She has also developed several agri-based technologies which are ready for commercialization. She has taught a number of courses in analytical chemistry. Dr. Vankar has successfully completed over 25 research projects. She has supervised 5 Ph.D. candidates, 21 M.Sc. candidates and 8 M. Phil. Candidates.

Dr. Vankar has written five books on natural dyes and contributed a chapter in four, produced three documentary films and has two patents to her credit. She has published over 80 research papers in reputed journals.

Abstract:

Most natural dyes are mordant dyes requiring metal salts (mordants) to produce an affinity between the fiber (cotton, silk, wool) and the dye. A bio-mordant is a natural material having one or more metal ion in it which can act as a mordant. Various studies have been done with plants or plant parts as potential bio-mordants e.g., Pyrus pashia and Eurya acuminata readily available in the north east region of India. Similarly, work has also been done with other bio-mordants such as ash of guava leaves and banana leaves. The extract of Eurya acuminata is found to contain substantial amount of Al. This presentation will describe our work aimed at using such natural metal containing bio-materials as bio-mordants.

Enzymes are biological catalysts that are very specific in nature catalyzing only very select chemical reactions and only with very select substances. These can be used in chemical as well as bio chemical processes as they are very efficient under normal conditions of temperature, pressure and pH. On account of their bio-origin enzymes make processes eco-friendly. Enzymes are increasingly used in textile wet processing due to their proven flexibility and reliability. This presentation will also discuss our work aimed at using enzymes as mordants in the natural dyeing process.