

Traditional Dyeing of Silk with Natural Dyes by Eco-Friendly Method

Authors : Samera Salimpour Abkenar

Abstract : In traditional dyeing of natural fibers with natural dyes, metal salts are commonly used to increase color stability. This method always carries the risk of environmental pollution (contamination of arable soils and fresh groundwater) due to the release of dyeing effluents containing large amounts of metal. Therefore, researchers are always looking for new methods to obtain a green dyeing system. In this research, the use of the enzymatic dyeing method to prevent environmental pollution with metals and reduce production costs has been proposed. After degumming and bleaching, raw silk fabrics were dyed with natural dyes (Madder and Sumac) by three methods (pre-mordanting with a metal salt, one-step enzymatic dyeing, and two-step enzymatic dyeing). Results show that silk dyed with natural dyes by the enzymatic method has higher color strength and colorfastness than the pretreated with a metal salt. Also, the amount of remained dyes in the dyeing wastewater is significantly reduced by the enzymatic method. It is found that the enzymatic dyeing method leads to improvement of dye absorption, color strength, soft hand, no change in color shade, low production costs (due to low dyeing temperature), and a significant reduction in environmental pollution.

Keywords : eco-friendly, natural dyes, silk, traditional dyeing

Conference Title : ICNDDTA 2021 : International Conference on Natural Dyes in Textile Applications

Conference Location : Copenhagen, Denmark

Conference Dates : July 19-20, 2021