

Phytosynthesis of silver nanoparticles on the woolen yarn with synthesized by sumac (*Rhus coriaria* L.) seed extract

Mousa Sadeghi-Kiakhani^{1*}, Elaheh Hashemi²

^a*Institute for Color Science and Technology, Department of Organic Colorants, Tehran, Iran*

^b*Department of Chemistry, Faculty of Sciences, Shahid Rajaee teacher training university, Tehran, Iran*

**Corresponding author. Tel.: +98 21 22944184; fax: +98 21 22947537. E-mail: sadeghi-mo@icrc.ac.ir*

Abstract

The development of green synthesis of silver nanoparticles instead of using toxic chemicals has attracted the attention of researchers. Most of the proposed methods are based on the use of natural compounds of plant origin [1], with a special focus on the principles of green chemistry. In this regard, the synthesis of silver nanoparticles using agricultural and industrial waste or food as a regenerating and capping agent can be a valuable and economic method. Examples of this approach are the production of silver nanoparticles using rice husk extract, blueberry and red berry waste, tamarind peel and tangerine peel [2, 3].

Although there are a limited number of reports about the green synthesis of silver nanoparticles by the sumac seed as a regenerating and stabilizing agent. The present study aims to use of the synthesized nanoparticles for dyeing of woolen yarns. For this purpose, different concentrations of sumac seed extract and silver nitrate solution were used on the wool fabric. The colorimetric data of the dyed samples was determined using a reflectance spectrophotometer. In addition, the size of silver nanoparticles in dyeing solution was determined by absorbance method and DLS device.

Keywords: Natural dye, Silver nanoparticles, Sumac seed extract, Color fastness, Dyeing

References

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