

B. N. M. Institute of Technology

Bengaluru – 560070

Innovative Teaching Methods

Title of Innovation method/activity: Crossover Learning

Faculty / Inventor: Reena Kulkarni

Designation: Assistant Professor

Goals / objective of method: Experiment to generate nanoparticles.

Description of method (8 – 10 lines):

Students conduct an experiment in laboratory to synthesize silver nanoparticles. The synthesis of nanoparticles using green-synthesis has been considered to be a cost effective and environmental friendly alternative compared to the chemical and physical methods. Plant-mediated synthesis/green-synthesis/biosynthesis of nanoparticles is a green chemistry approach which connects nanotechnology to biotechnology. The synthesis of silver nanoparticles or (Green-Silver) has been demonstrated using a sample of *Ocimum tenuiflorum* extract to reduce solution of aqueous silver nitrate. The silver nanoparticles synthesized were characterized by Ultraviolet-Visible (UV-vis) Spectrometer. It is confirmed that the synthesized silver nanoparticles are crystalline in nature.

Benefits of method: Experimentation will help students to analyze and use different tools to characterize nanoparticles. Students will be able to appreciate the application point of view and discuss the various methods and tools available for synthesis. This would help them for selecting topics to conduct their final year projects or mini projects. This method of conducting experiment helps kindle interest in students to learn topics which are very elaborate, in a quick manner. This work proved the capability of using biomaterial towards the synthesis of silver nanoparticles, by adopting the principles of green chemistry.

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An Experiment Report

On

“Green Synthesis of Silver Nanoparticles Using Extracts of

***Ocimumtenuiflorum*”**

Conducted by:

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ABSTRACT

The synthesis of nanoparticles using green-synthesis has been considered to be a cost effective and environmental friendly alternative compared to the chemical and physical methods. Plant-mediated synthesis/green-synthesis/biosynthesis of nanoparticles is a green chemistry approach which connects nanotechnology to biotechnology. In the present study, synthesis of silver nanoparticles or (Green-Silver) has been demonstrated using a sample of *ocimumtenuiflorum* extract to reduce solution of a aqueous silver nitrate. The silver nanoparticles synthesized were characterized by Ultraviolet-Visible (UV-vis) Spectrometer. It is confirmed that the synthesized silver nanoparticles are crystalline in nature. This work proved the capability of using biomaterial towards the synthesis of silver nanoparticles, by a adopting the principles of green chemistry.

3. Results

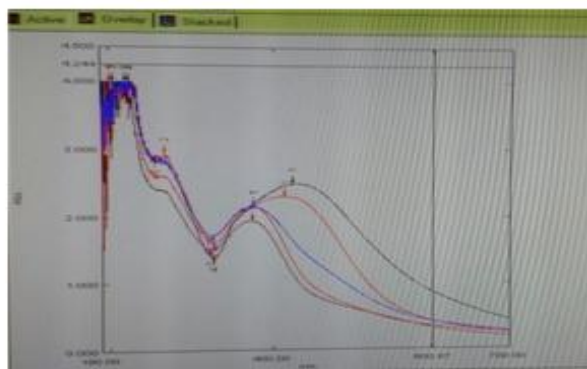


Figure 3.1: UV Spectrometer analysis of Ag

From the UV Spectrophotometer, the above plot was obtained. Five samples were taken (based on the concentrate of leaf extract) for spectrophotometry and absorbance of all the samples was recorded as shown in table 1.

Table 1: UV Spectrophotometer sample values.

Trials	Wavelength(nm)	Absorption
1ml	423.5	2.505
2ml	412.5	2.376
3ml	373.7	2.154
4ml	374.5	2.174
5ml	372.5	1.945

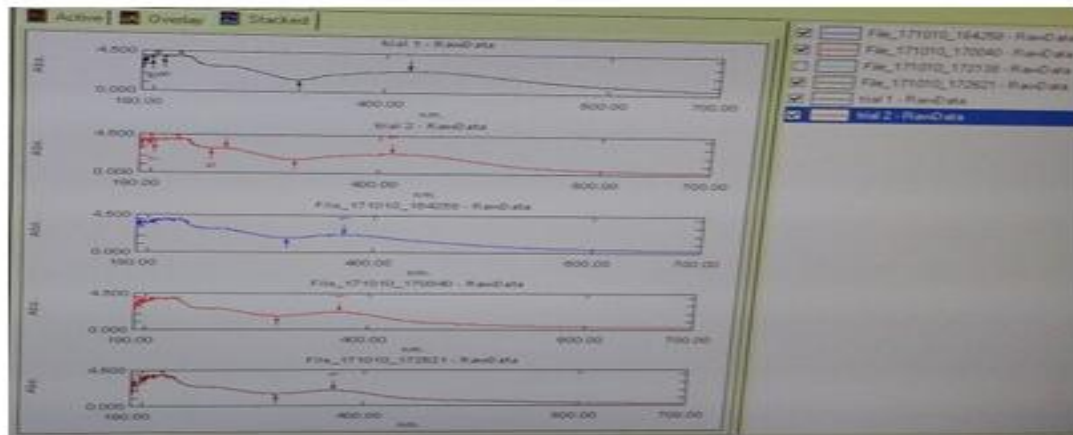


Figure 2: Spectrum of different samples