

عنوان مقاله:

Green Synthesis of Pinus Cone Supported Silver Nanoparticles using Achillea Millefolium L. Extract: Application of the Nanoparticles for Catalytic Reduction of 4-Nitro Phenol

محل انتشار:

نهمین سمینار ملی شیمی و محیط زیست ایران (سال: 1398)

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خلاصه مقاله:

In past decade, one of the most refractory pollutants in wastewaters is 4-nitrophenol (4-NP), which conventional wastewater treatment methods cannot be sufficient and effective in the degradation of this compound. Recently, the metal nano particles (MNPs) such as silver NPs have received much attention from researchers as catalyst for chemical reduction of 4- NP. However, the agglomeration of the M NPs is a major drawback, which can be overcome with the use of an ideal support. In the present research, silver nanoparticles (Ag NPs) are synthesized using Achillea millefolium L. extract as an economic, conventional, and effective reducing and stabilizing agent and pinus cone as a natural and inexpensive valuable resource and environmentally benign support. FT-IR spectroscopy, UV-Vis spectroscopy, X-ray Diffraction (XRD), Field emission scanning electron microscopy (FESEM), Energy Dispersive X-ray Spectroscopy (EDS), Elemental mapping, and Transmission Electron Microscopy (TEM) were used to characterize pine cone, Ag NPs, and Ag NPs/pine cone. The catalytic activity of the Ag NPs/ pinus cone was investigated for the reduction of 4-nitrophenol (4-NP). Results revealed that Ag NPs/pine cone had the high catalytic activity. In addition, Ag NPs/ pinus cone can be recovered and reused several times with no significant loss of its catalytic activity.

کلمات کلیدی:

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