

Silver nanoparticles coated by Schiff base as an adsorbent of lead from polluted water

Ahmed M. Zaidan¹, Zainab T. Alabdullah^{2*} , Uhood J. Al-Hamdani ²

¹ Department of Chemistry, College of Marine Science Center, University of Basrah, Basrah, Iraq.

² Department of Chemistry, College of Education for Pure Sciences, University of Basrah, Basrah, Iraq.

ARTICLE INFO

Received 04 December 2022

Accepted 20 March 2023

Published 30 June 2023

Keywords :

Adsorption, Schiff base, Silver nanoparticles, SEM.

Citation: A. M. Zaidan et al., J. Basrah Res. (Sci.) 49(1), 34 (2023).
[DOI:https://doi.org/10.56714/bjrs.34.1.4](https://doi.org/10.56714/bjrs.34.1.4)

ABSTRACT

Synthesis of silver nanoparticles coated with Schiff base was achieved. Silver nanoparticles are reduced and coated using Schiff base. Schiff base serves as a capping to stop silver oxide from overgrowing. Schiff base produces silver nanoparticles with a novel form and a distinctive appearance. The presence of Schiff base as a reducing and capping agent can give a new shape for prepared silver nanoparticles. The structure of Schiff base was analyzed based on spectral data (¹H nuclear magnetic resonance (H¹NMR), Mass spectroscopy, and Fourier-transform infrared spectroscopy (FTIR). The formation of silver nanoparticles within a surface plasmon band at 461 nm was observed using UV-Vis Spectroscopy. Silver nanoparticles with a spherical shape and a particle size between 50 and 100 nm are visible in a scanning electron microscope image. For the first time, silver nanoparticles coated with Schiff base were used to adsorb lead from a sample of polluted water. The rate of adsorption was 69%.

1.Introduction

Azomethine is the main compounds in Schiff base which is importance in an organic synthetic field ^[1]. Schiff bases performance as intermediates in the synthesis of a number of compounds such as industrial and biological compounds through cycloaddition, ring closure and replacement reactions. Schiff base derivatives are beneficial compounds for synthesis of bioactive mediators such as lemon juice ^[1-15]. because of Schiff bases offer varied applications they have been used in different fields such chelating ^[16], inhibitors ^[17, 18], as a catalytic system and liquid crystal metal nanoparticles also is very common due to their varied applications in various fields ^[23]. Because of high surface area to volume ratio for nanomaterials, their properties will difference because the nano size such as physical, chemical and electrical properties ^[24]. In current years silver nanoparticles have attracted a lot of attentions due to their, chemical stability, good conductivity, and catalysis ^[25]. Incredible properties of nanomaterials strongly depend on size and, shape of nanoparticles (NPs), their interactions with stabilizers and surrounding media, and also on their preparation method. Controlling the synthesis of nanocrystals is therefore a major obstacle to understanding their better application features^[26]. The shapes of nanoparticles depend on their interaction with stabilizers and capping agent such as surfactants, ligands, polymers or dendrimers ^[27, 28]. High reactivity is a significant issue for analysis

*Corresponding author email : zt.yasin@yahoo.com

