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Silver nanoclusters doped in mordenite zeolite as photocatalysts toward pesticides

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Silver-based nanoclusters incorporated into mordenite zeolite were prepared and analyzed using various spectroscopic techniques. In the zeolite hosts, both theoretical and experimental results show the presence of silver nanoclusters with various sizes and environments. Upon increasing the excitation wavelength from 250 to 300 nm, the study indicates that the high energy mode (at 415 nm) was deactivated and the low energy emission mode (at 520 nm) was gradually activated. The catalyzed system increases the photodecomposition of phosmet in comparison with the uncatalyzed system upon irradiation with different UV wavelengths. In addition, the largest catalytic activity was observed upon the irradiation of the catalyzed solution at 302 nm, in which an increase in the decomposition rate by 40 folds was observed. We discovered that the photodecomposition products are similar for all systems but variations in the relative amount of these products were observed at different conditions in which phosphorothionic acid was formed as a major product in both catalyzed systems.

Biography

Imad A Abu-Yousef earned his PhD in Organo-Sulfur Chemistry in 1995 from McGill University (Montreal, Canada). Subsequently, he pursued a Post-doctoral fellowship in Polymer Chemistry at McGill University. His research work was recognized by prestigious institutions that have bestowed awards on him, including the Jordan Higher Education Natural Sciences Award (Jordan, 2010), the National Bank of Sharjah Excellence in Research and Scholarship Award (United Arab Emirates, 2002) and Abdul Hameed Shoman Award for Outstanding Young Chemist Researcher in the Middle East (Jordan, 2000). He published more than 50 papers in reputed international journals and has been serving as an Editorial Board Member of the *Journal of Saudi Chemical Society*, an Elsevier Published Journal.

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