Physica E: Low-dimensional Systems and Nanostructures
Volume 127, March 2021, 114509

2D layer stacked metallic Cu-serine triangular pyramids and their surface plasmon resonance properties

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Received 19 May 2020, Revised 28 August 2020, Accepted 20 October 2020, Available online 24 October 2020.

https://doi.org/10.1016/j.physe.2020.114509

Abstract

2D copper crystals are synthesized by following a novel solution process. Layer stacked 2D metallic Cu nanostructures are successfully synthesized by chemical reduction using L-Serine and ascorbic acid. SEM and TEM images showed the formation of 2D crystals of copper which are layer by layer stacked to deliver triangular pyramidal structures with embedded spherical as well as rod shaped Cu NPs. Surface Plasmon Resonance (SPR) is studied as a function of pH and concentration of L-serine. SPR is originated from the sharp corners and edges of the triangular pyramid structure and large number of surface particles of copper which are embedded on the 2D copper sheets. The results are highly useful for the development of non-noble metal based SPR sensors.