Available online at **www.joac.info**

ISSN: 2278-1862

Journal of Applicable Chemistry

2020, 9 (2): 229-239

(International Peer Reviewed Journal)

Novel Sphere CuO/Ag_3PO_4 Nanocomposites with Enhanced Visible Light Photocatalytic Activity for Degradation of Amaranth

K. Palpandi[1], K. Eswaran[2] and B. Kavitha[1]*

1. P.G and Research Department of Chemistry, Cardamom Planter's Association College, Bodinayakanur, Tamil nadu-625513, **INDIA**
2. Department of Chemistry, College of Natural Sciences, Kongju National University, Gongju, Chungnum 32588, **SOUTH KOREA**

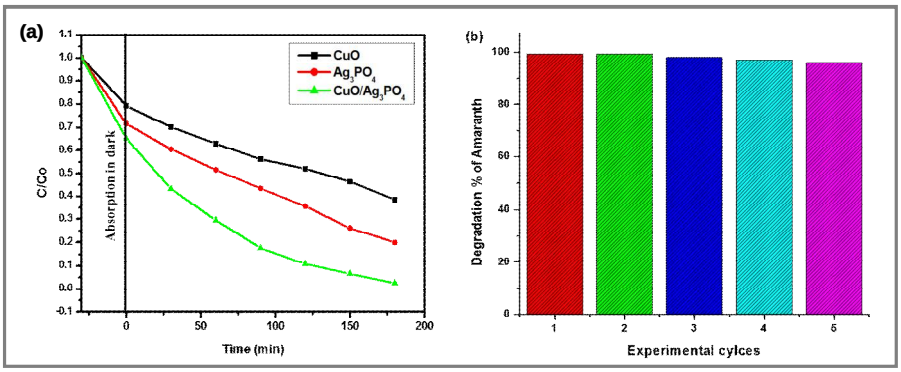
Email: kaviravee@gmail.com

Accepted on 27th February, 2020

ABSTRACT

Novel CuO/Ag_3PO_4 nanocomposites have been synthesized via co-precipitation approach and characterized by means of X-ray powder diffraction (XRD), scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDS), Fourier transform infrared spectroscopy (FT-IR), transmission electron microscopy (TEM) and UV-visible diffuse reflectance spectra (UV-Vis-DRS). The as prepared CuO/Ag_3PO_4 has a monoclinic structure with average crystalline size of 25.4 nm. The SEM outcomes suggest that the CuO/Ag_3PO_4 has sphere like structure reveals strong absorption in visible region and it suggests exceedingly great photocatalytic activity for the photodegradation of amaranth under visible light irradiation. The possible mechanism for the extraordinary overall performance of sphere like CuO/Ag_3PO_4 nanocomposites is proposed. The photocatalytic pastime enhancement of CuO/Ag_3PO_4 is related to the efficient separation of electron hole pairs. The impact on various response parameters just like the effect of catalyst concentration, preliminary amaranth concentration, pH and contact time were investigated in detail.

Graphical Abstract



(a) photodegradation curve of amaranth in the presence of CuO, Ag_3PO_4, CuO/Ag_3PO_4under visible light irradiation and (b) Reusability of CuO/Ag_3PO_4 for the photodegradation of amaranth.

Keywords: $CuO/AgPO_4$ nanosphere, Photocatalytic activity, Visible light, Amaranth.