A green and an environmentally benign route to prepare Cu_2O nanocrystals and their potential applications

M.A. Shah*

Department of Physics,
King Abdul Aziz University,
Jeddah 21589, Kingdom of Saudi Arabia
E-mail: ashrafshah2003@yahoo.co.in
E-mail: mashahnit@yahoo.com
*Corresponding author

F.M. Al-Nowaiser

Department of Chemistry,
King Abdul Aziz University,
Jeddah 21589, Kingdom of Saudi Arabia
E-mail: fow_now2002@hotmail.com

Abstract: A new and versatile technique have been successfully developed for the synthesis of Cu_2O nanocrystals without using any additives and/or amines. The technique is based on a simple reaction between copper powder and distilled water at very low temperature. There are other different existing approaches which were applied for the synthesis of copper oxide nanostructures, but most of the methods involve environmentally malignant chemicals and organic solvents which are toxic and not easily degraded in the environment. This synthetic technique has the following advantages: Firstly, it is one step synthesis approach, making it easy to control the growth kinetics. Secondly, the synthesis needs no sophisticated equipments since it is conducted at low temperature of 220ºC. Thirdly, the approach is non toxic without producing hazardous waste as water is being used as solvent as well as source of oxygen. The approach can be scaled up.

Keywords: copper oxide; distilled water; synthesis; nanoparticles; XRD.

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Biographical notes: M.A. Shah graduated from the University of Kashmir, Srinagar in 1994. He received his Doctorate in Materials Science, from Jamia Millia Islamia, New Dehli in January 2000. He joined the National Institute of Technology, Srinagar in September 1999. He established the World Bank funded Sophisticated Instrumentation Centre which caters to the needs of the scientific fraternity of the whole region and is the author of *Principles of Nanoscience and Nanotechnology*, a book for all. He is an explorer of a versatile technique 'A safe way to nanotechnology' for the synthesis of oxide nanomaterials. Recently, he joined the Faculty of Sciences, King Abdul Aziz University, Jeddah, Saudi Arabia. He is a member of many science academies