



## Preparation and Characterization of Polysaccharide Mediated Copper Nanoparticle: The Effect of Time-Varying Exposure

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### Abstract:

This paper reported the synthesis of copper nanoparticles (Cu-NPs) via the chemical method in the presence of  $\text{Cu-SO}_4 \cdot 5\text{H}_2\text{O}$  as precursor, polysaccharide as a stabilizer and ascorbic acid was acted as a reducing agent. In this study, the irradiation time was varied to evaluate the effect of time exposure with the Cu-NPs production. The analysis of samples without and with polysaccharide was characterized using ultraviolet-visible (UV-Vis) spectroscopy, X-ray diffraction (XRD) and Fourier-transform infrared coupled with attenuated total reflection instrument (ATR-FTIR). Based on the observation, reddish-brown colour solution demonstrated the formation of Cu-NPs and UV-Vis proved the plasmon resonance (SPR) spectra at the peak of 580 nm. The sharp peak of XRD at angle  $2\theta$  gives the value of  $43.69^\circ$ ,  $50.81^\circ$ , and  $74.42^\circ$  was attributed to Cu-NPs and the presence of polysaccharides maintained the crystallinity of Cu-NPs. FTIR results shows that the interaction peaks were occurred based on shifting of the peak to higher wavenumber. In conclusion, Cu-NPs were successfully produced by using the microwave method and be a function of time.



### Biography:

Zatil Izzah Tarmizi has completed her PhD in 2019 at Department of Environmental Engineering and Green Technology, Malaysia-Japan International Institute of Technology (MJIIT). Now, she is researcher in Chemical Energy Conversion and Application i-kohza in MJIIT. She has published five papers in reputed journals..

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