

Deep Eutectic Solvent-Water Solvated Synthesis of Tungsten Oxide Nanoparticles with Photochromic and Antimicrobial Properties

Adetola Abiola Ajayi*, Olayinka Oderinde*, Sodiq Olalekan Ogunbayo, Olubunmi Ayonu Ogundiran, Adeola Roseline Olawuyi, Adebobola Ololade Agbeja

Editor's note: Photochromic and antimicrobial smart coatings hold great potential for advancements in modern applications, such as anti-UV photochromic contact lenses and bionic artificial skin. Ajayi et al. utilized deep eutectic solvents as a sustainable and adaptable medium for synthesizing tungsten oxide (WO_3) nanoparticles through an eco-friendly, low-temperature method. Optical analyses of the produced samples demonstrated strong UV absorption and a rapid, reversible photochromic transition occurring within just five seconds of UV exposure. Furthermore, antimicrobial tests indicated a dose-dependent bactericidal effect of the synthesized WO_3 nanoparticles against *Escherichia coli* and *Staphylococcus aureus*.

doi: 10.22034/jams.2025.210152

How to cite: A.A. Ajayi et al. *Journal of Applied Material Science*, 2025, 1, 210152.



Antimicrobial WO_3 NPs

JOURNAL OF
APPLIED
MATERIAL
SCIENCE

jams.hsu.ac.ir