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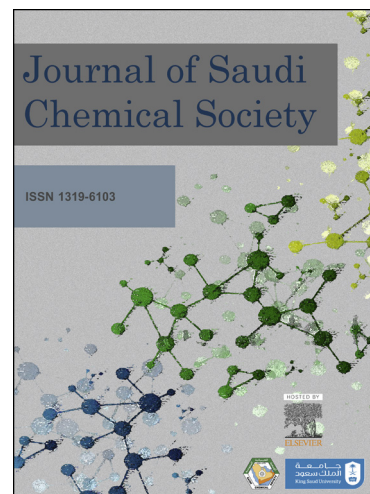
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**Combined static electromagnetic radiation and plant extract contribute to the biosynthesis of instable nanosilver responsible for the growth of microstructures**

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### **Abstract**

The instantly biosynthesis of silver nanoparticles under static electromagnetic induction, its antibacterial activity and its post exposure monitoring were reported here. A mix of silver nitrate solution and *Ruta chalepensis* leaf extract was irradiated by a static electromagnetic field (SMF) of 200 mT. The characteristics and stability of the biosynthesized silver nanoparticles (Ag NPs) were determined. Compared to the non-irradiated exposure, the morphology and state of the obtained material change once the exposition to SMF is turned off. Shifting from 453 to 473 nm, the percentage of the needles shaped silver nanoparticles increased and continue to win and dominate the biomixture toward the spherical silver nanoparticles. TEM microscopy showed a wide range of silver materials designed in different nanoscale morphology and beyond where they undergo major changes affecting mainly the size, shape and form (dispersity) of nanosilver.

**Keywords:** differentiation, static electromagnetic field, *Ruta chalepensis*, nanostructure, silver

### **1. Background**

Gaining amazing reputation across many disciplines, noble metallic micro and -nanostructure continue their exponential exploitation and emergent uses due to their strong variability in properties. In particular, silver materials have been extensively investigated for many applications owing to their distinctive optical and

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