Preparation of silver nanoparticles in virgin coconut oil using laser ablation

Abstract

Laser ablation of a silver plate immersed in virgin coconut oil was carried out for fabrication of silver nanoparticles. A Nd:YAG laser at wavelengths of 1064 nm was used for ablation of the plate at different times. The virgin coconut oil allowed formation of nanoparticles with well-dispersed, uniform particle diameters that were stable for a reasonable length of time. The particle sizes and volume fraction of nanoparticles inside the solutions obtained at 15, 30, 45 min ablation times were 4.84, 5.18, 6.33 nm and $1.0 \times 10{-}8$, $1.6 \times 10{-}8$, $2.4 \times 10{-}8$, respectively. The presented method for preparation of silver nanoparticles in virgin coconut oil is environmentally friendly and may be considered a green method.

Keyword: Silver nanoparticles; Laser ablation; Virgin coconut oil