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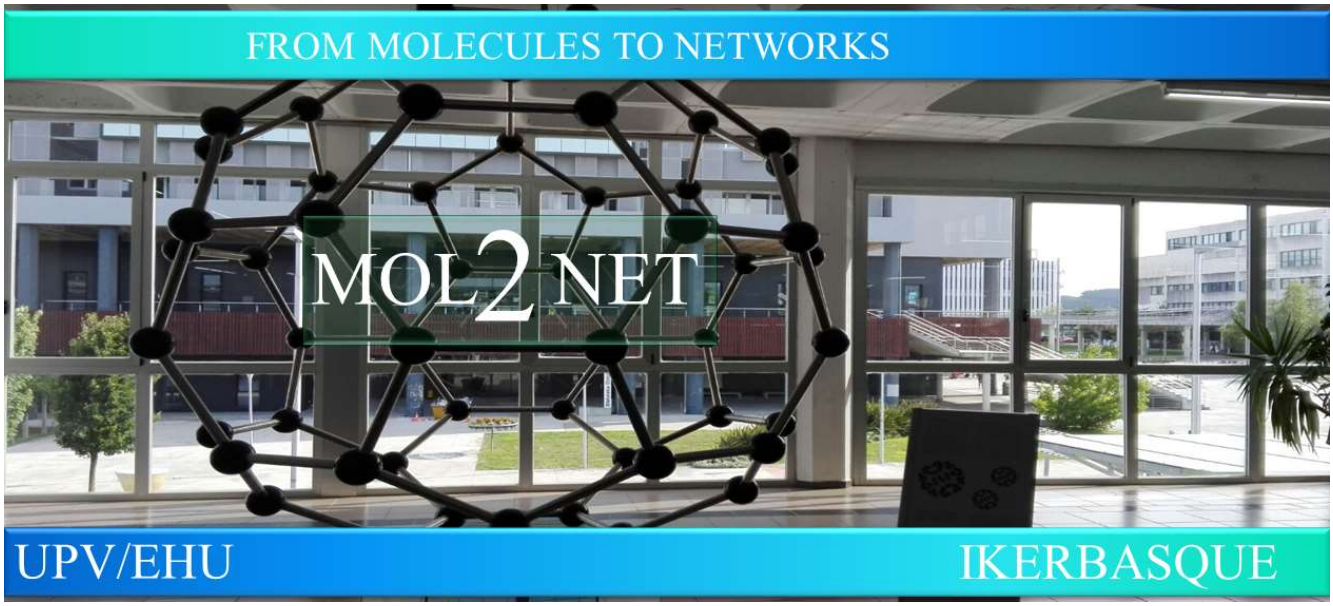

Functional green synthesized noble metallic nanoparticles with potential antimicrobial activity

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Abstract

Nanoparticles are versatile materials widely applied in numerous scientific fields from the textile industry to nanomedicine and optical sensors. Their synthesis is achieved using conventional chemical synthesis as well as unconventional routes that start from renewable sources such as plants and their constituent parts (e.g.: stem, bark, root, seeds, flowers, etc.). Green alternative routes allow not only a proper preservation of the shape and sized of the metallic nanoparticles but, in many cases, gives better results in terms of stability and functionality. This research paper describes the green synthesis of two functional nanoparticles, silver nanoparticles (AgNPs) and gold nanoparticles (AuNPs) from aqueous plant extract of Birthwort (Aristolochia clematitis), a native European herbaceous plant from Aristolochiaceae family. Silver and gold nanoparticles were green synthesized at room temperature and at 500 C and the resulted functional noble nanoparticles were characterized using UV – Vis, FTIR, DLS techniques. Kinetics involved recording UV-Vis spectra at different time intervals and antioxidant activity was evaluated by the DPPH technique. Also, antimicrobial activity was evaluated using known strains.