Testing of novel nano gold ink for inkjet printing

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\textbf{A B S T R A C T}

Gold nanoparticles (GNPs) were synthesised by the Ultrasonic Spray Pyrolysis (USP) process and collected in deionised water with the addition of a stabiliser, i.e. PVP (0.1 wt.%). With the use of a rotary evaporator, a highly concentrated GNPs' suspension was achieved (600 ppm concentration of GNPs), which was used directly as novel nano gold ink for inkjet printing. The physical and chemical characteristics of such prepared nano gold ink were explained in detail by the use of Zeta (ζ) Potential, ATR-FTIR spectroscopy, UV/VIS spectroscopy, and nanoparticle size was identified through SEM. With nano gold ink the chosen pattern was printed onto photo paper, which was characterised for confirming the presence of gold with optical and SEM/EDX observations. The observations revealed that the tested printed nano gold ink on the paper provided a new route for the fabrication of paper-based electrochemical immunosensors, colorimetric sensors and nanometallic biomedical sensors.

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