

Shelf Life Improvement of SERS-Active Substrates Based on Copper and Porous Aluminum Oxide

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Abstract: Copper nanostructures demonstrating an activity in the surface-enhanced Raman scattering (SERS) spectroscopy were formed via electrochemical deposition of copper on porous aluminum oxide (PAO) and protected from oxidation by surface coverage with polyethylene glycol (PEG) and silver. The SERS measurements of 10⁻⁶-M 4-mercaptophenylboronic acid (MPBA) molecules adsorbed on fresh Cu-coated samples, Cu-PEG and Cu-PEG-Ag nanocomposites after 5, 10, 15, 60, 180 and 300min of storage in air indicated the effectiveness of the proposed approach in protection from oxidation.

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