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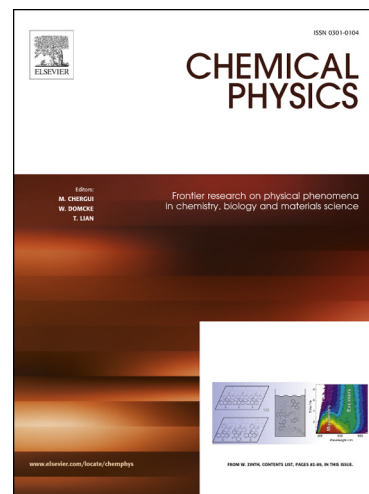
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Controlled growth of centimeter level gold nanowires via a solid-state ionics method and their SERS effect**Dapeng Xu***, Song Zhang, Wei Yang, Jian Chen*

School of Materials Science and Chemical Engineering, Xi'an Technological University, Xi'an, 710032, People's Republic of China

* Corresponding author.

E-mail addresses: badi56441071@sina.com (Dapeng Xu), chenjian@xatu.edu.cn (Jian Chen).

Tel: +86(029)-8617-3324; fax: +86(029)-8617-3324

Abstract: Centimeter level gold nanowires were prepared by a solid-state ionics method under a direct current electric field (DCEF) using fast ionic conductor RbAg_4I_5 films. The surface morphology and chemical composition of the gold nanowires were characterized by scanning electron microscopy (SEM). Raman enhancement performance of the gold nanowires substrates was detected by Rhodamine 6G (R6G) aqueous solutions as probe molecules. Long-range order and short-range order gold nanowires with the length of 1 centimeter were prepared by a solid-state ionics method. The nanowires were bamboo-shaped and the diameters of nanowires ranged from 40 to 90 nm, many regularly arranged nanoparticles with the diameter from 10 to 30 nm lie in the prepared nanowires. The limiting concentrations of R6G for the prepared gold nanowires SERS substrates is 10^{-17} mol/L.

Keywords: Gold nanowires; Fast ionic conductor films; Surface enhanced Raman scattering; Solid-state ionics method

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