Gold loaded textile fibers as substrates for Raman imaging and SERS detection

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Analytical methods based on Raman imaging coupled with surface-enhanced Raman scattering (SERS) are among the tools most exploited in recent years to detect vestigial amounts of organic compounds of environmental and biological interest.[1,2] In particular, SERS has been largely improved due to considerable progress in developing ultra-sensitive analytical platforms, which rely on our understanding of physicochemical phenomena occurring at the surfaces of nanomaterials. On the other hand, confocal Raman microscopy provides high-resolution images with short measurement times in the analysis of nanoscale materials. Our interest in this field led us to explore both methods to develop nanostructured platforms for the SERS detection of organic pollutants in water, namely active pharmaceutical ingredients and pesticides.[3,4] This communication provides an overview of our research on developing easy-handled SERS substrates based on textile fibres for analytical detection. Chemical strategies employed for the coating of textile fibres with gold nanoparticles will also be described. Illustrative examples of SERS applications and their evaluation using Raman imaging will be provided, along with perspectives of development in chemical detection applied to real contexts.

REFERENCES

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FIGURES

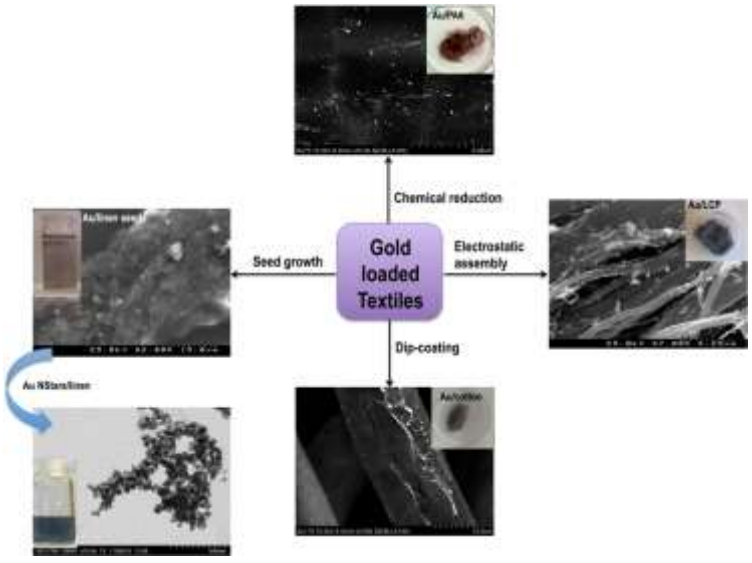

Figure 1: Distinct strategies for the preparation of Gold-based textiles nanocomposites.