Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

Fabrication and application of three-dimensional polycarbonate nanofibers for surface-enhanced Raman scattering (SERS) measurements

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The role of solid support material is vital in surface-enhanced Raman scattering (SERS) substrate sensor application. The surface-to-volume ratio of solid support material is directly proportional to the loading capacity of the nanostructure. So, we were focused on the improvement of morphology hierarchy. Using electrospinning, and scrutinizing its parameters, polycarbonate nanofiber (PCNFs) was successfully prepared, uniformly, and reproducibly. The prepared PCNFs material is used to decorate silver nanoparticles (AgNPs) on it. In terms of SERS sensitivity, our prepared 3D SERS substrate is ten times larger in Raman counts than 2D SERS substrates. On the other hand, roughened PCNFs were used as a substrate to control the formation of colloidal coffee-ring in size. Based on this method, phenylalanine in urine is determined for rapid screening of phenylketonuria (PKU) disorder.

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2:30 PM