Supporting Information to:

Highly sensitive multifunctional recyclable Ag-TiO_2 nanorods SERS substrates for photocatalytic degradation and detection of dye molecules

Samir Kumar, Devesh K. Lodhi and J. P. Singh*

Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India.

**E-mail: jpsingh@physics.iitd.ac.in*

†Both the authors DKL and SK contributed equally.

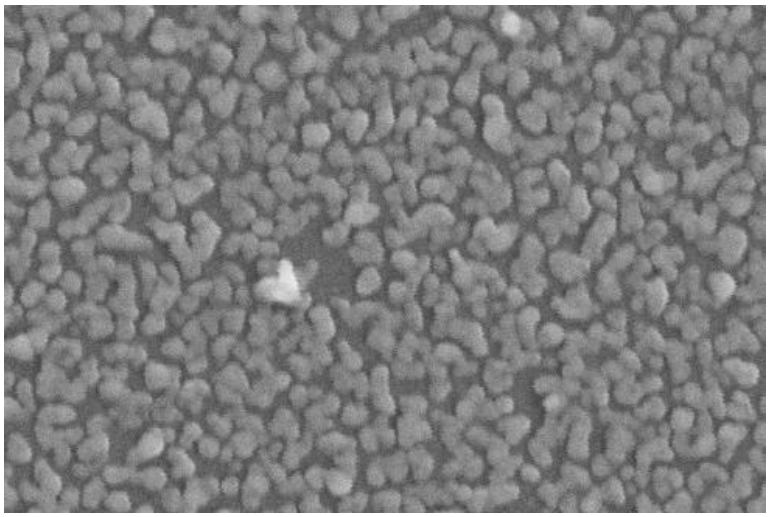

Figure S1: SEM image of silver island deposition on the TiO_2 thin film showing the silver nucleation formation on the TiO_2 thin film. The nucleation's are of abrupt shape and completely different and larger in size in comparison to the silver nucleation on the silver nanorods.

The SERS detection of Rhodamine 6G dye has been done on these samples as shown in Fig S2. The enhancement factor in the case of Ag-TiO_2 thin film was found to be 15 % of Ag-TiO_2 nanorods. The reason behind the small enhancement in case of Ag-TiO_2 thin film may be because of the lower density and larger size of the silver nucleation.

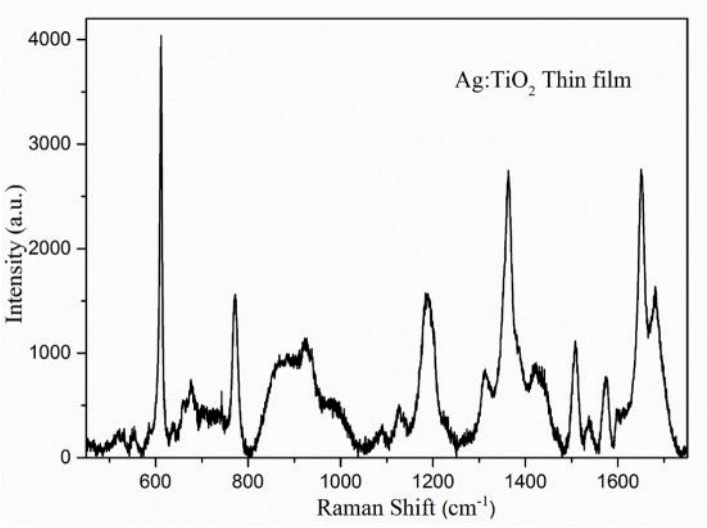

Figure S2: Raman spectra of Rhodamine 6G dye on the Ag-TiO2 thin film samples. Clearly, the sensitivity of Ag-TiO_2 thin film substrates is less than that of Ag-TiO_2 nanorods substrates.

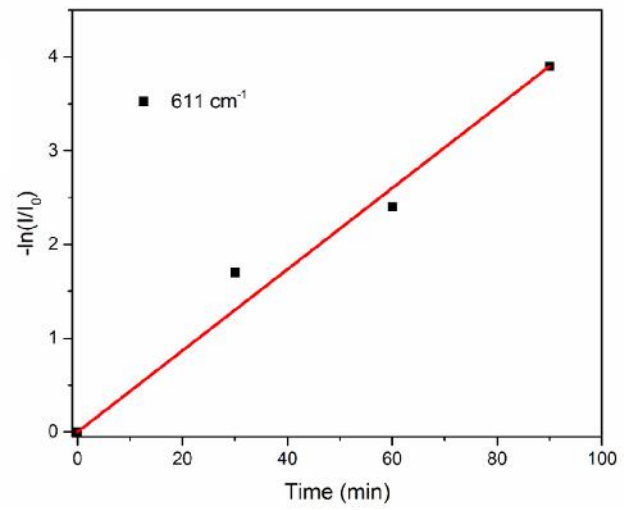

Figure S3: Linear relationship of -ln(I/I_0) versus reaction time acquired from 611 cm^{-1}SERS bands