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Silver island deposited titanium oxide composite substrate for surface-enhanced Raman spectroscopy with high enhance factor and ultra low detection concentration

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2 **Surface-enhanced Raman Spectroscopy with High Enhance Factor**  
3 **and Ultra Low Detection Concentration**

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16 **Abstract:** Silver island deposited titanium oxide composite substrates for surface-enhanced  
17 Raman spectroscopy (SERS) have been synthesized by successively growth of titanium oxide  
18 on glass substrate and in situ deposition of silver islands. The underlying titanium oxide film  
19 is porous in structure with an uniform thickness of about 100 nm, and the silver particles are  
20 deposited both as flower-like islands and small nanoparticles with a size of 2 ~ 3 nm on the  
21 TiO<sub>2</sub>. The silver island deposited titanium oxide composite substrates show excellent SERS  
22 performance. The detection concentration for 4-aminothiophenol (PATP) is measured to be as

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