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Title: Synthesis and SERS activity of V_2O_5 Nanoparticles

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Highlights

1. V_2O_5 nanoparticles (NPs) of different sizes have been synthesized.
2. SERS activity of R6G over V_2O_5 NPs is size-dependent.
3. 42 nm V_2O_5 NPs have a detecting limit better than 10^{-8} M R6G.
4. SERS activity of R6G over V_2O_5 NPs is wavelength-dependent.
5. Energy matching between V_2O_5 and R6G is essential in PICT process.

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