

Supporting information for:

Plasmonic Mesoporous Composites as Molecular Sieves for SERS Detection

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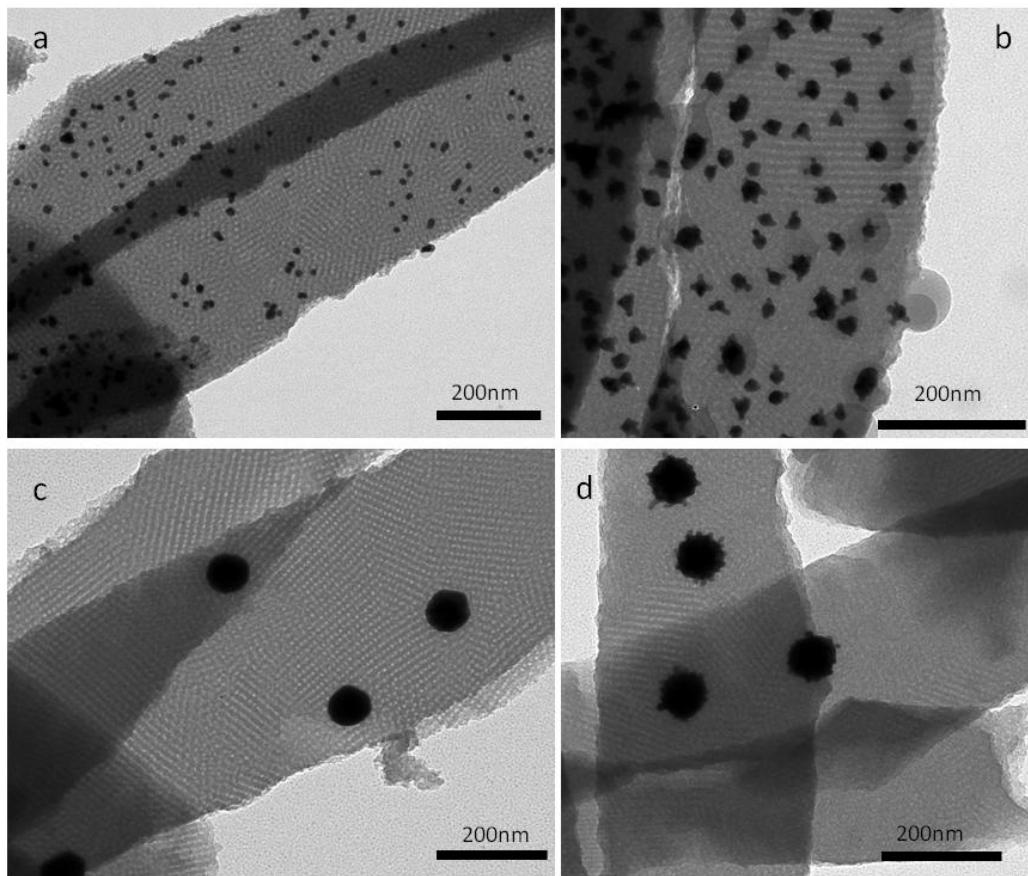


Figure S1. TEM images for 15nmGNP@SF (a,b) and 80nmGNP@SF (c,d) samples, before (a,c) and after (b,d) seeded growth.

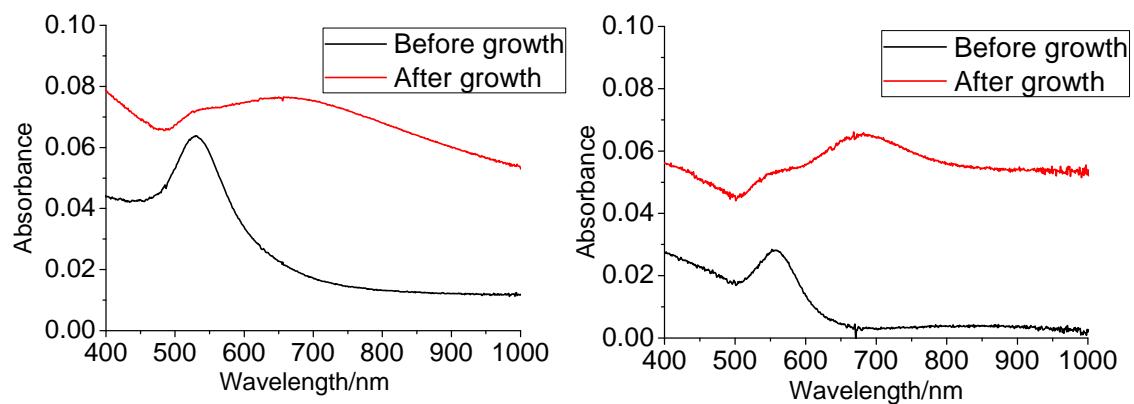


Figure S2. UV-vis-NIR spectra of 15nmGNP@SF (left panel) and 80nmGNP@SF (right panel), before (black lines) and after (red lines) seeded growth.

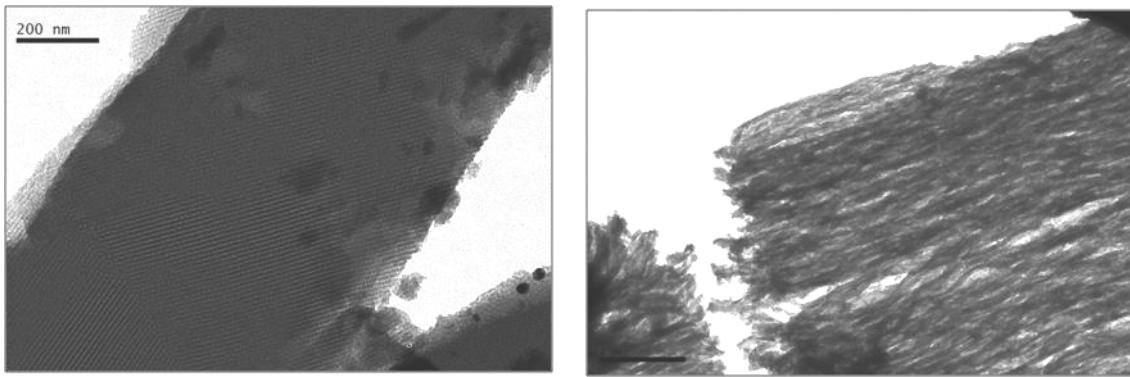


Figure S3. TEM images of mesoporous TF (left) and SF (right) thin films after ageing in PBS overnight.

Table S1. Description of synthesized and characterized samples with different seed particles and growth conditions. Sample 8 is highlighted, since it provided the highest SERS enhancement.

Sample	Sample	Size GNP	Growing conditions (CTAB:Au:AA)
1	Au@TF	15nm	
2	Au@TF	15nm	60:1:8
3	Au@TF	15nm	60:1:32
4	Au@TF	15nm	60:1:16
5	Au@TF	15nm	30:1:16
6	Au@TF	15nm	120:1:16
7	Au@SF	15nm	60:1:16
8	Au@TF	80nm	60:1:16
9	Au@SF	80nm	60:1:16

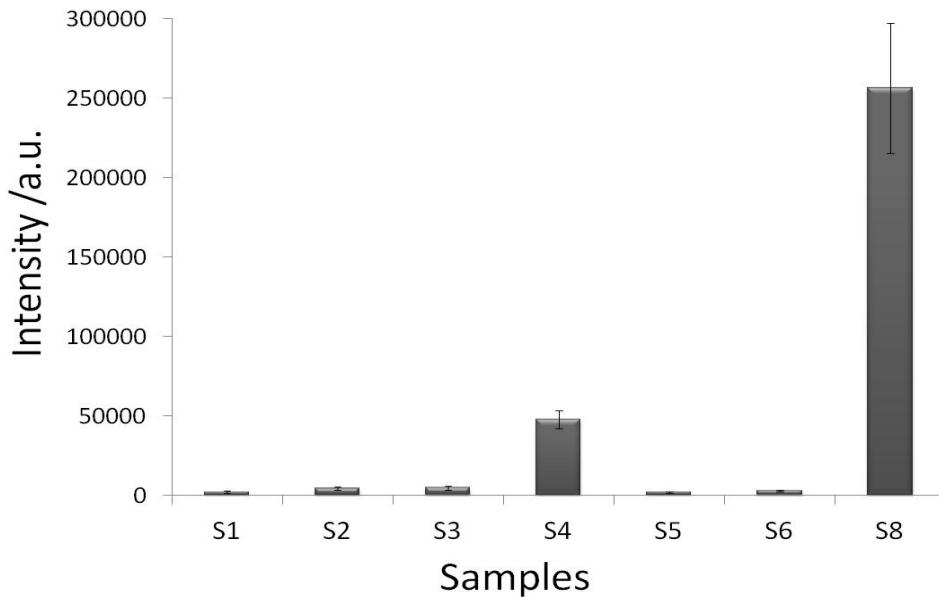


Figure S4. Histogram comparing the intensity of the band at 1332 cm^{-1} of 4-NBT for the different growth solutions listed in Table 1 and for different gold nanoparticle sizes. The total intensity represented is the average of 20 spectra taken from SERS surface maps of each sample.

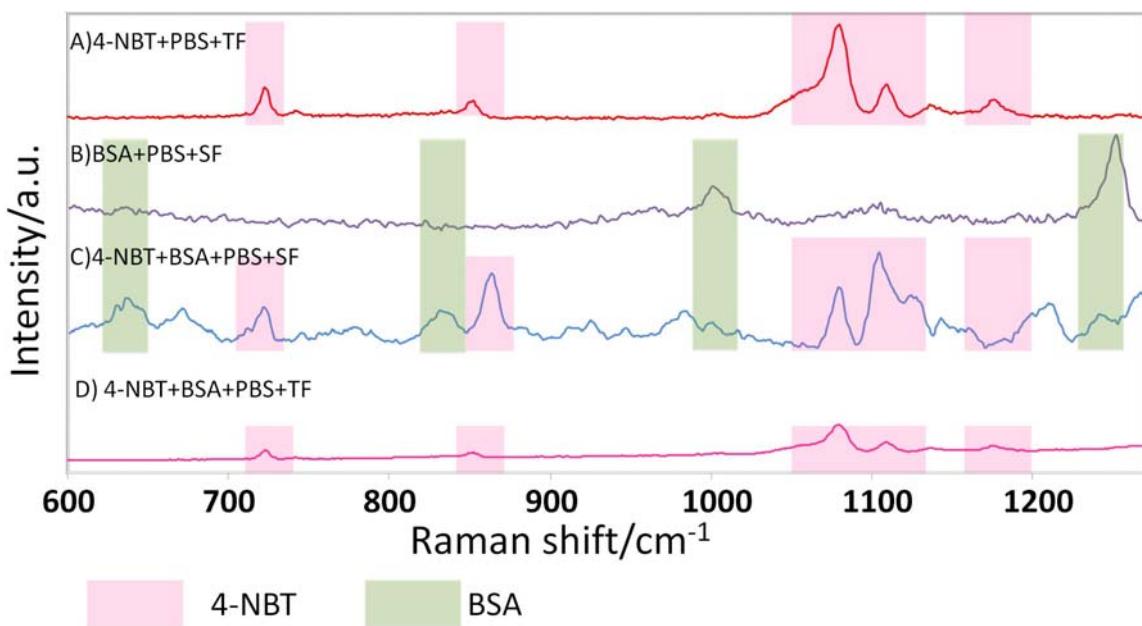


Figure S5. SERS spectra of 15nmGNP with different film compositions and proof-of-concept of size selective SERS: A) Spectrum of 4-NBT in PBS on TF films; B) Spectrum of BSA in PBS on SF films; C) Spectrum of 4-NBT on SF films, in the presence of BSA and PBS; D) Spectrum of 4-NBT on TF films in the presence of BSA and PBS.