

**“Supporting Information”**

**Hierarchical Laser patterned Silver/Graphene Oxide (AgNPs/GO) Hybrid SERS Sensor  
for Explosive Detection**

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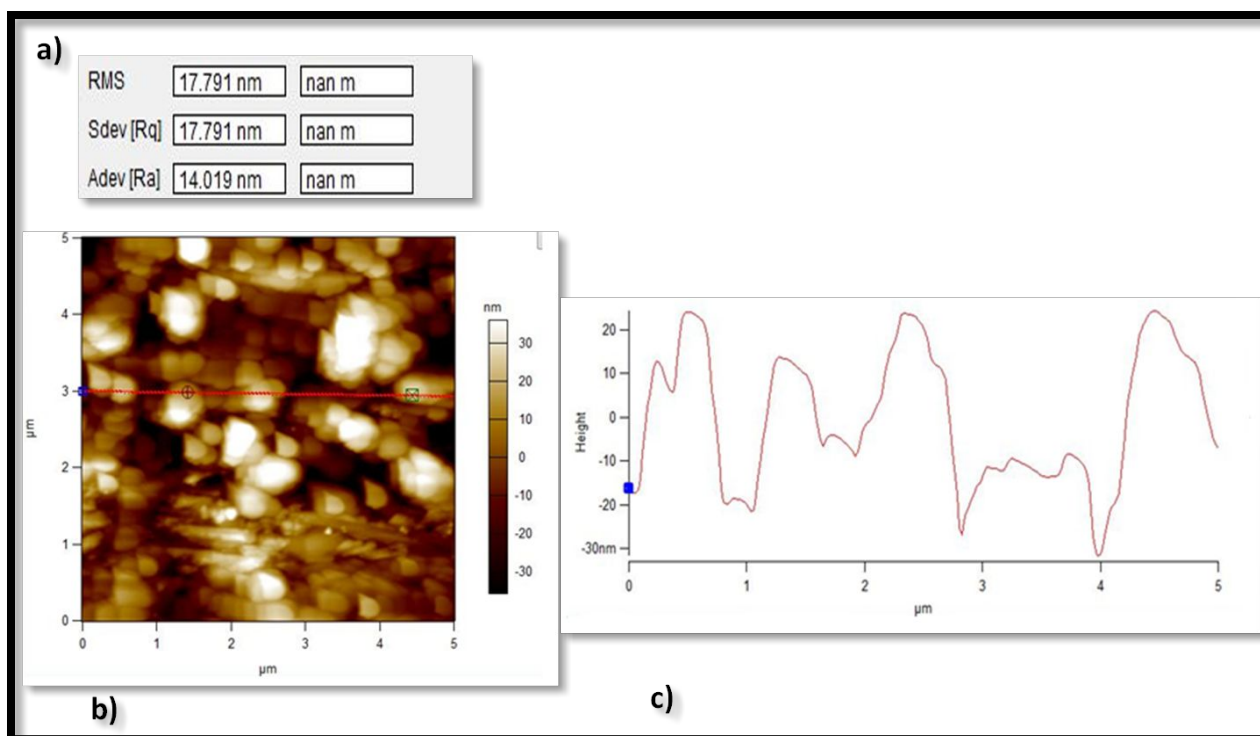
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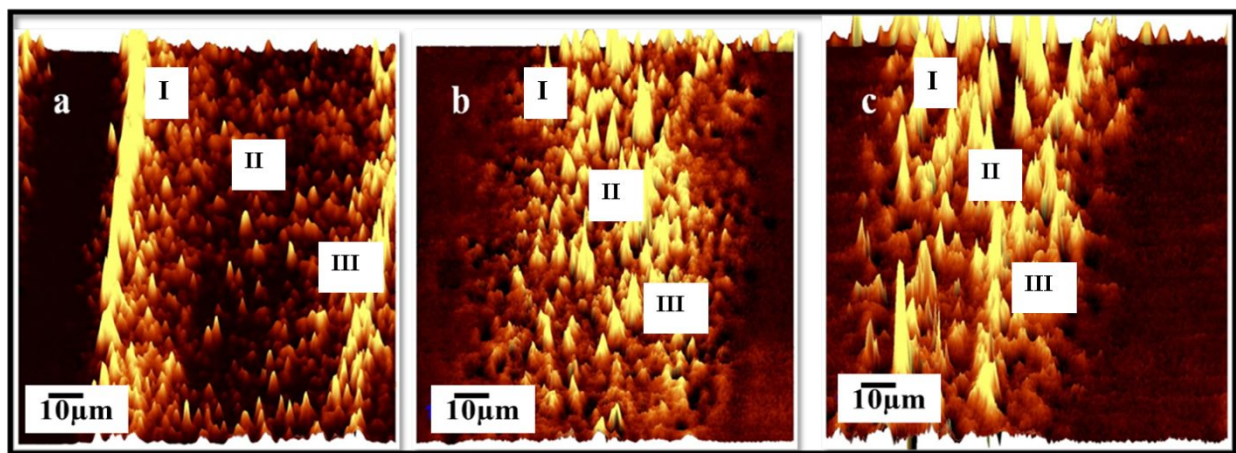
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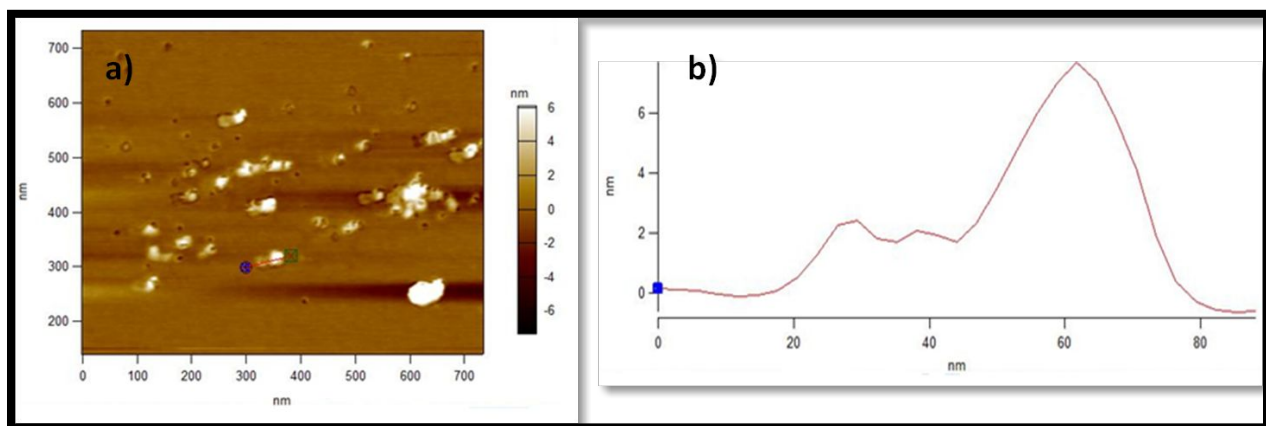
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**Figure S-1 a) AFM image of Ag-Sheet (Ag-S) with rms value, b) AFM image of a line profile over Ag-S, and c) Line profile graph showing the surface roughness.**



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**Figure S-3 a) AFM image of GO b) Height Vs width graph.**

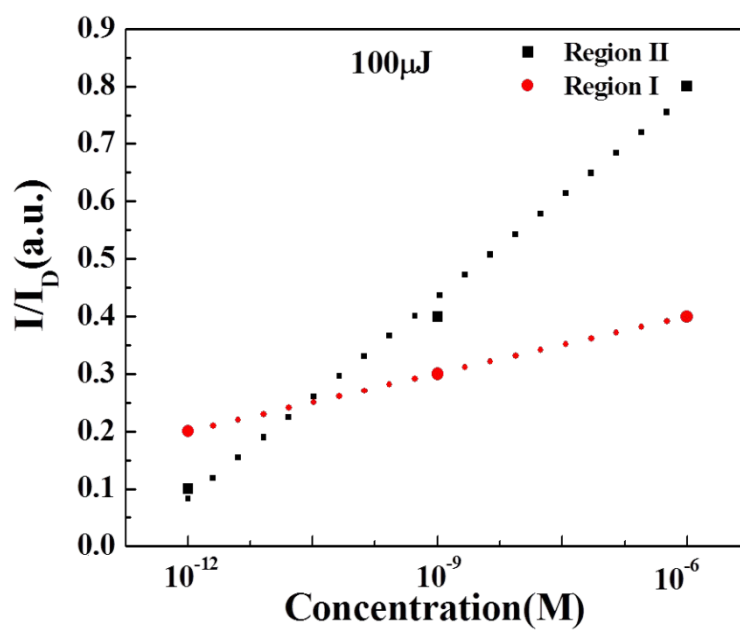
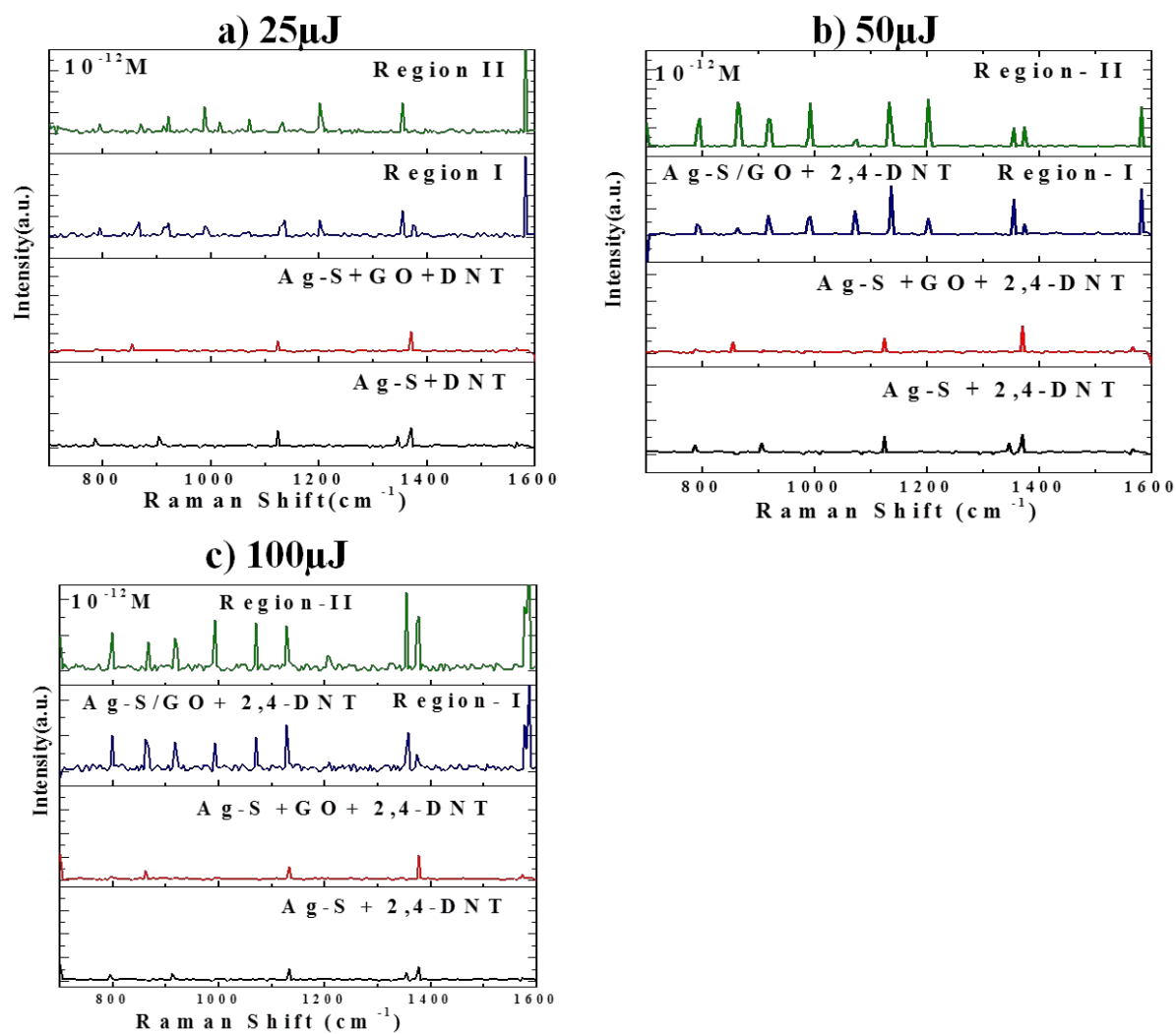


Figure S-4 Variation of  $I/I_D$  ratio with concentrations ( $10^{-12}$ ,  $10^{-9}$  and  $10^{-6}$ M) of 2,4-DNT



**Figure S-5 Raman spectra of 2,4-DNT on Ag-NPs/GO substrate ablated at a)25  $\mu\text{J}$ , b)50  $\mu\text{J}$  and c)100 $\mu\text{J}$ .**

S.No.	Substrate	Enhancement Factor on plain Ag sheet (Region I,II)		Enhancement Factor on Glass slide (Region ,II)	
		I	II	I	II
1.	Ag-S/GO (25μJ)	$2.74 \times 10^9$	$1.93 \times 10^9$	$1.10 \times 10^{10}$	$2.14 \times 10^{10}$
2.	Ag-S/GO (50μJ)	$5.31 \times 10^9$	$2.47 \times 10^9$	$2.18 \times 10^{10}$	$7.79 \times 10^9$
3.	Ag-S/GO (100μJ)	$5.41 \times 10^9$	$5.26 \times 10^9$	$1.15 \times 10^{10}$	$2.12 \times 10^{10}$

**Table S-1 Enhancement factors on Ag-S and Ag-S/GO hybrids.**

S.No.	SERS Substrate	Analyte	Enhancement Factor	Ref.
1.	Ag@Au and Cu@Au alloy nanoparticles (NPs) using the femtosecond laser ablation in liquid	2,4-Dinitrotoluene, (DNT)	$10^5$	[2]
2.	Ag, Au <sub>20</sub> Ag <sub>80</sub> , Au <sub>30</sub> Ag <sub>70</sub> , Au <sub>50</sub> Ag <sub>50</sub> , Au <sub>70</sub> Ag <sub>30</sub> , and Au <sub>80</sub> Ag <sub>20</sub> and Au NP films	2, 4-Dinitrotoluene, (DNT)	$2.7 \times 10^6$ , $1.1 \times 10^6$ , $1.83 \times 10^6$ , $9.9 \times 10^5$ , $3.2 \times 10^6$ , $1.34 \times 10^6$ & $1.67 \times 10^6$	[32]
3.	rGO/Ag NPs substrate	2, 4-Dinitrotoluene, (DNT)	$10^3$	[50]
4.	Hybridized spherical and triangular gold nanoparticles	2, 4-Dinitrotoluene, (DNT)	$2.13 \times 10^7$ and $1.05 \times 10^8$	[47]
5.	Ag, Ag <sub>0.65</sub> Au <sub>0.35</sub> , Ag <sub>0.5</sub> Au <sub>0.5</sub> , and Ag <sub>0.35</sub> Au <sub>0.65</sub> NSs, respectively	2, 4-Dinitrotoluene, (DNT)	$\sim 7 \times 10^5$ , $\sim 1 \times 10^7$ , $\sim 3 \times 10^5$ , and $\sim 1.2 \times 10^6$ .	[48]
6.	Ag-S/GO (25μJ), Ag-S/GO (50μJ) and Ag-S/GO (100μJ).	2, 4-Dinitrotoluene, (DNT)	$2.74 \times 10^9$ , $5.31 \times 10^9$ and $5.41 \times 10^9$	<b>Present Paper</b>

**Table S-2** Comparison of enhancement factors of various SERS substrates