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Supporting Information

Gold Nanoparticle Incorporated Graphene Oxide as SERS Platform for Ultra-trace Anti-body Free Sensing of Cancer Biomarker CEA

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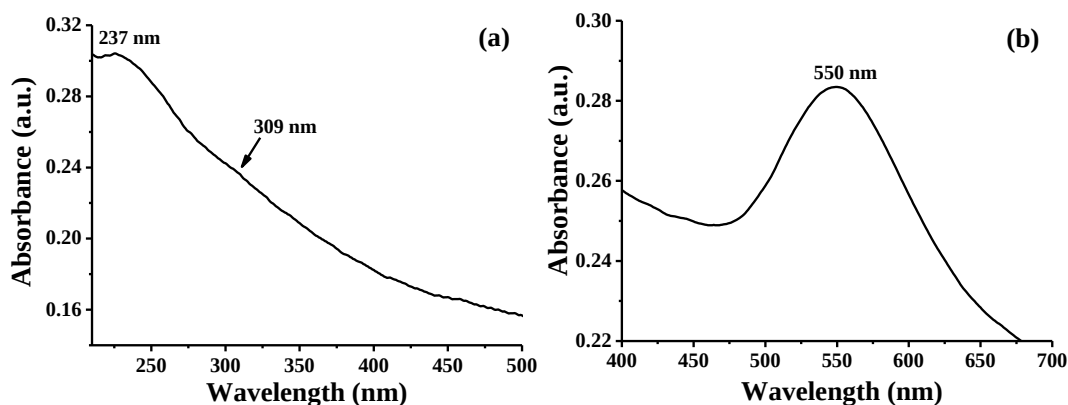


Figure S1: UV-visible spectra of (a) GO and (b) AuNPs

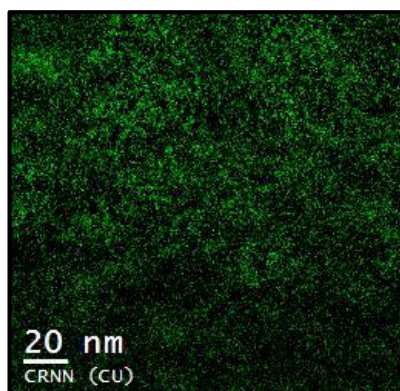


Figure S2: Elemental mapping micrograph of Au present in AuGO. Green spots represent Au nanoparticles located on GO

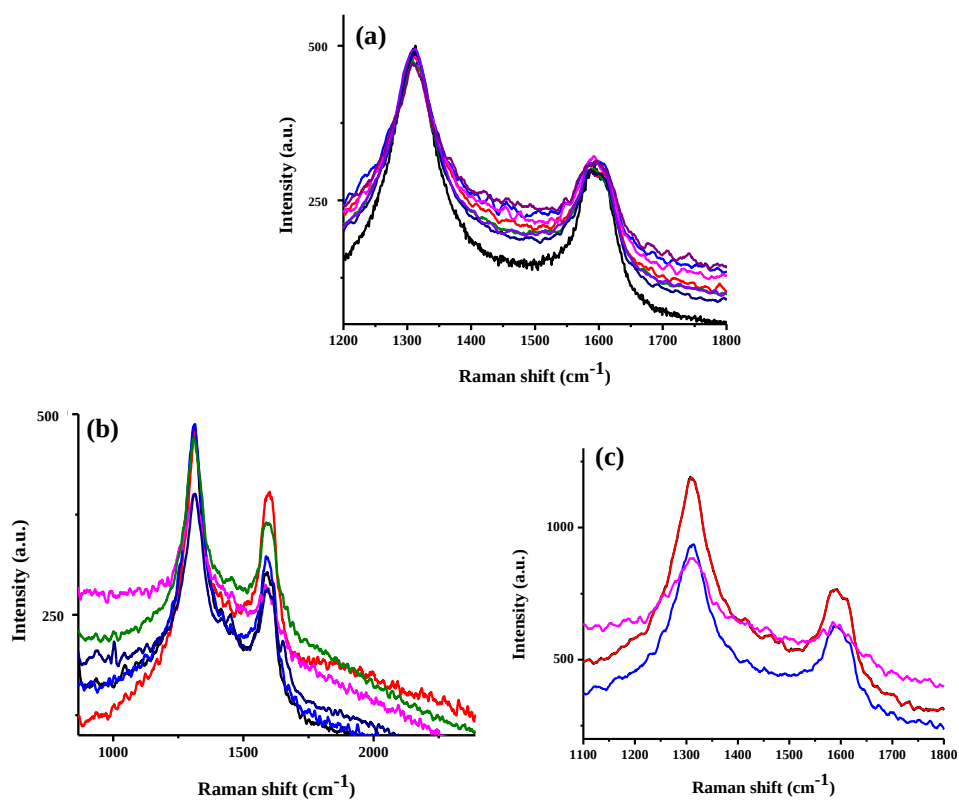


Figure S3: Raman spectral profile of AuGO as SERS reporter with increasing concentration of (a) CA 19-9, (b) CA 125 and (c) PSA in serum medium

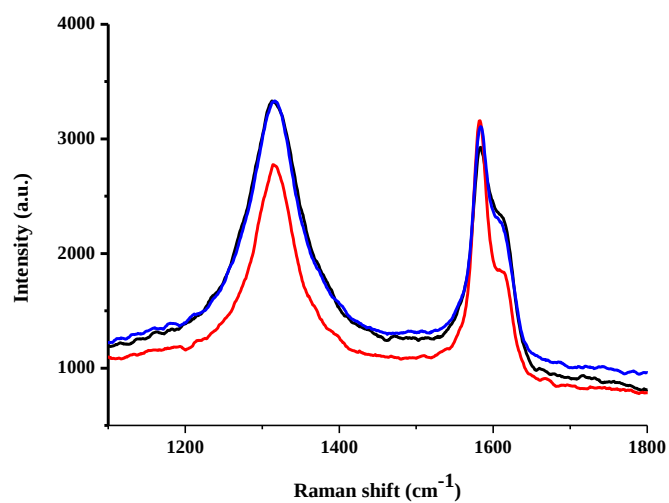


Figure 4: Raman spectral profile of AuGO with increasing volume of serum

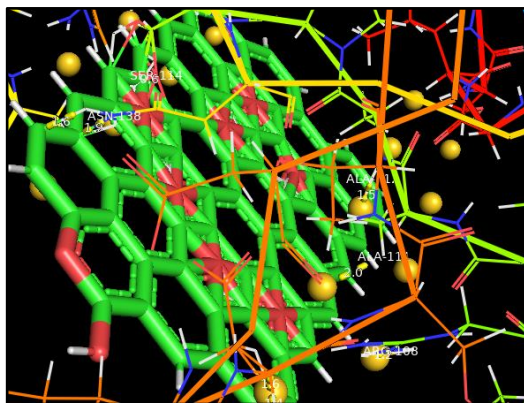


Figure S5: Molecular docking of interaction of AuGO with CA 19-9

Table S1: List of amino acid residues of CA 19-9 interacting with AuGO

Binding domain of AuGO	Amino acid residue	Bond length (Å)
AuNP	Asp-170	1.4, 1.6
	Arg-108	1.2
	Ala-112	1.5
	Ala-111	2.0
GO	Asn-138	1.9

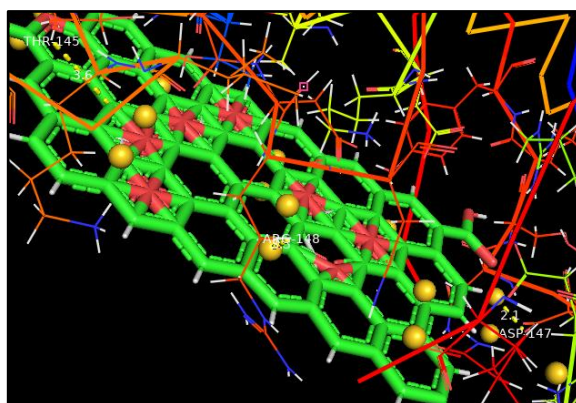


Figure S6: Molecular docking of interaction of AuGO with CA 125

Table S2: List of amino acid residues of CA 125 interacting with AuGO

Binding domain of AuGO	Amino acid residue	Bond length (Å)
AuNP	Asp-147	2.1
	Asp-101	1.7
	Arg-148	3.3
GO	Thr-145	3.6

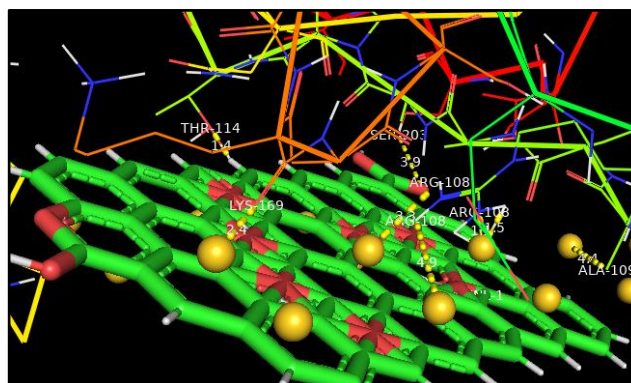


Figure S7: Molecular docking of interaction of AuGO with PSA

Table: S3: List of amino acid residues of PSA interacting with AuGO

Binding domain of AuGO	Amino acid residue	Bond length (Å)
AuNP	Lys-169	2.4
	Arg-108	1.1, 1.5, 1.9, 3.3
	Ala-109	4.4
GO	Thr-114	1.4
	Ser-203	3.9