

Electronic Supplementary Material

Matriz effect of properties of Au, ZnO and Eu₂O₃: Silica, titania and alumina matrices.

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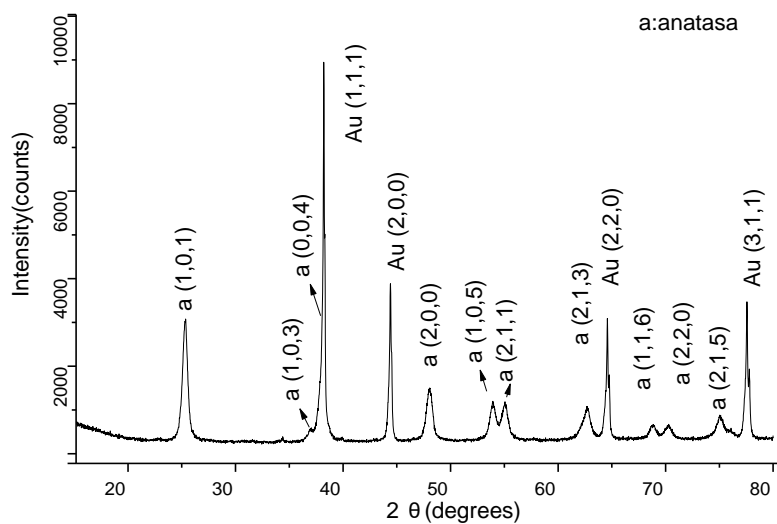
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S1 Table 1 Experimental Details of the synthesis of the precursors 1-18

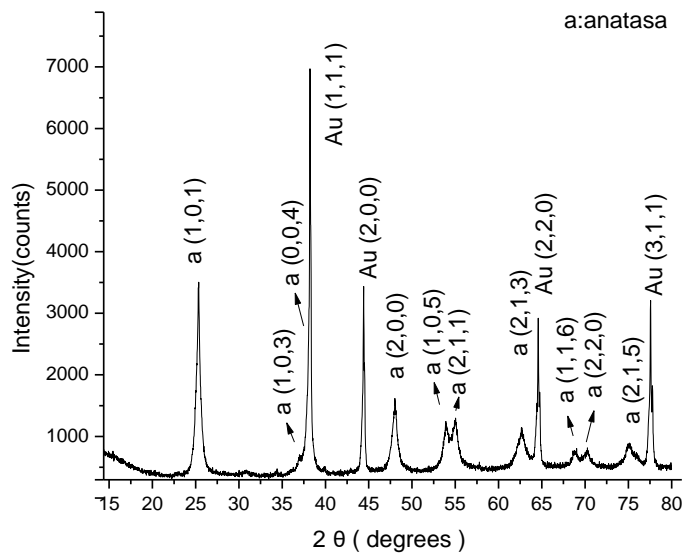
Precursor	Precursor Formula	Matrix	metallic salt (g)	Polymer (g)	SiO ₂ , TiO ₂ or Al ₂ O ₃	Acetic acid (mL)	H ₂ O (mL)	Composite	Composite number
(1)	Chitosan·AuCl ₃ /SiO ₂	SiO₂	0.4	0.51	28 mL	9.0	29	Au//SiO ₂	C ₁
(2)	PS-co-4-PVP·AuCl ₃ /SiO ₂	SiO₂	0.4	0.76	28 mL	9.0	29	Au//SiO ₂	
(3)	Chitosan·AuCl ₃ /TiO ₂	TiO₂	0.4	0.51	5 mL	0.48	0.43	Au//TiO ₂	C ₂
(4)	PS-co-4-PVP·AuCl ₃ /TiO ₂	TiO₂	0.4	0.76	5 mL	0.48	0.43	Au//TiO ₂	
(5)	Chitosan·AuCl ₃ /Al ₂ O ₃	Al₂O₃	0.4	0.51	5 mL	0.30	5	Au//Al ₂ O ₃	C ₃
(6)	PS-co-4-PVP·AuCl ₃ /Al ₂ O ₃	Al₂O₃	0.4	0.76	5 mL	0.30	5	Au//Al ₂ O ₃	
(7)	Chitosan·ZnCl ₂	SiO₂	0.4	0.51	28 mL	9.0	29	ZnO/SiO ₂	C ₄
(8)	PS-co-4-PVP·ZnCl ₂	SiO₂	0.4	0.76	28 mL	9.0	29	ZnO/SiO ₂	
(9)	Chitosan ZnCl ₂	TiO₂	0.4	0.51	5 mL	0.48	0.43	ZnO/TiO ₂	C ₅
(10)	PS-co-4-PVP·ZnCl ₂	TiO₂	0.4	0.76	5 mL	0.48	0.43	ZnO/TiO ₂	
(11)	Chitosan·ZnCl ₂	Al₂O₃	0.4	0.51	5 mL	0.30	5	ZnO/Al ₂ O ₃	C ₆
(12)	·PS-co-4-PVP·ZnCl ₂	Al₂O₃	0.4	0.76	5 mL	0.30	5	ZnO/Al ₂ O ₃	
(13)	Chitosan·Eu(NO ₃) ₃	SiO₂	0.4	0.51	28 mL	9.0	29	Eu ₂ O ₃ / SiO ₂	C ₇
(14)	PS-co-4-PVP·Eu(NO ₃) ₃	SiO₂	0.4	0.76	28 mL	9.0	29	Eu ₂ O ₃ / SiO ₂	
(15)	Chitosan·Eu(NO ₃) ₃	TiO₂	0.4	0.51	5 mL	0.48	0.43	Eu ₂ O ₃ / TiO ₂	C ₈
(16)	PS-co-4-PVP·Eu(NO ₃) ₃	TiO₂	0.4	0.76	5 mL	0.48	0.43	Eu ₂ O ₃ / TiO ₂	C ₁₀
(17)	Chitosan·Eu(NO ₃) ₃	Al₂O₃	0.4	0.51	5 mL	0.30	5	Eu ₂ O ₃ / Al ₂ O ₃	C ₁₁
(18)	PS-co-4-PVP·Eu(NO ₃) ₃	Al₂O₃	0.4	0.76	5 mL	0.30	5	Eu ₂ O ₃ / Al ₂ O ₃	C ₁₂

S2 XRD pattern for the composites, Au/TiO₂, Au/Al₂O₃, ZnO/TiO₂, ZnO/Al₂O₃ and Eu₂O₃/SiO₂, Eu₂O₃/TiO₂ and Eu₂O₃/Al₂O₃

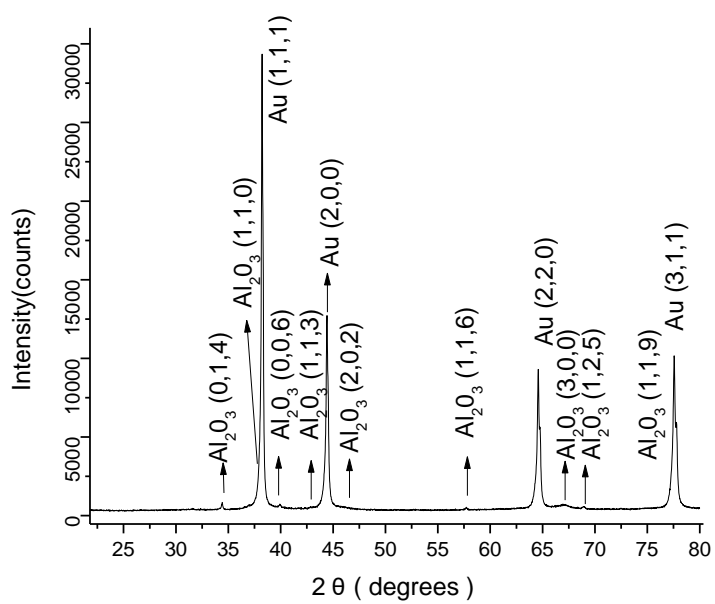
Au/TiO₂ from Chitosan precursor



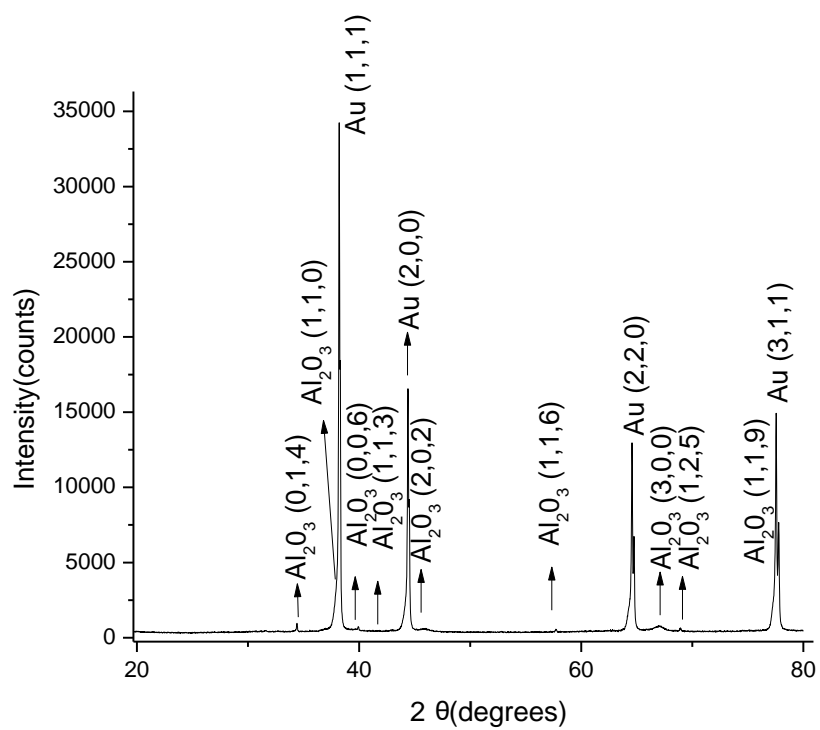
Au/TiO₂ from PS-co-4-PVP precursor



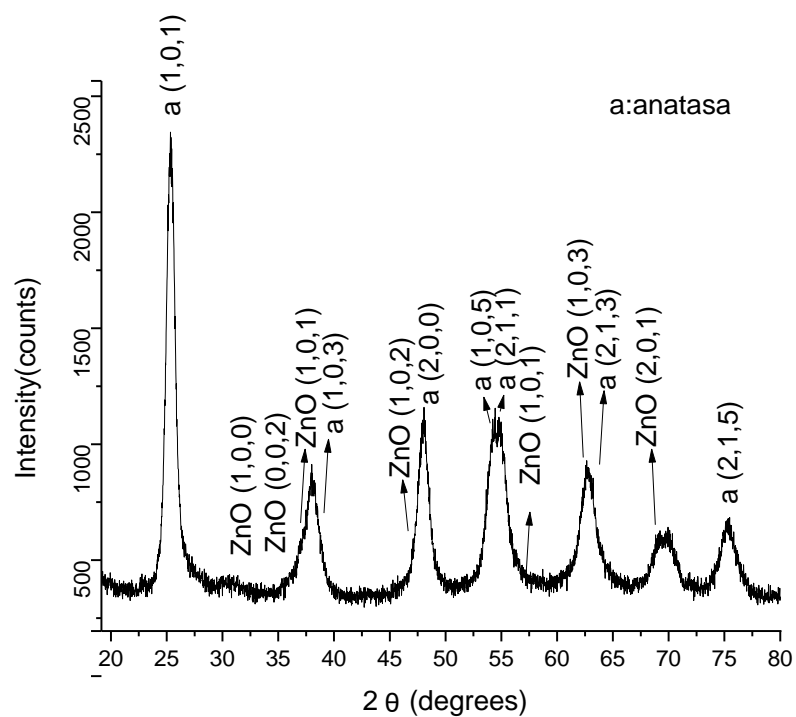
Au/Al₂O₃ from Chitosan precursors



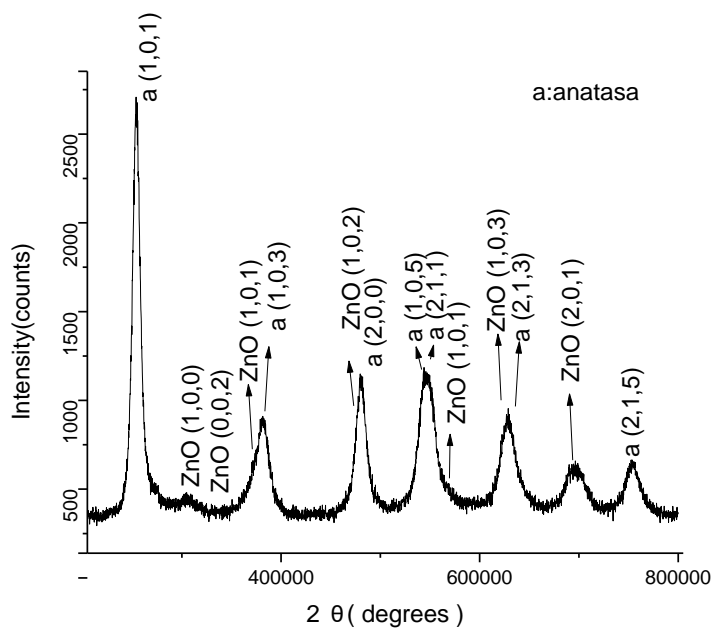
Au/Al₂O₃ from PS-co-4-PVP precursors



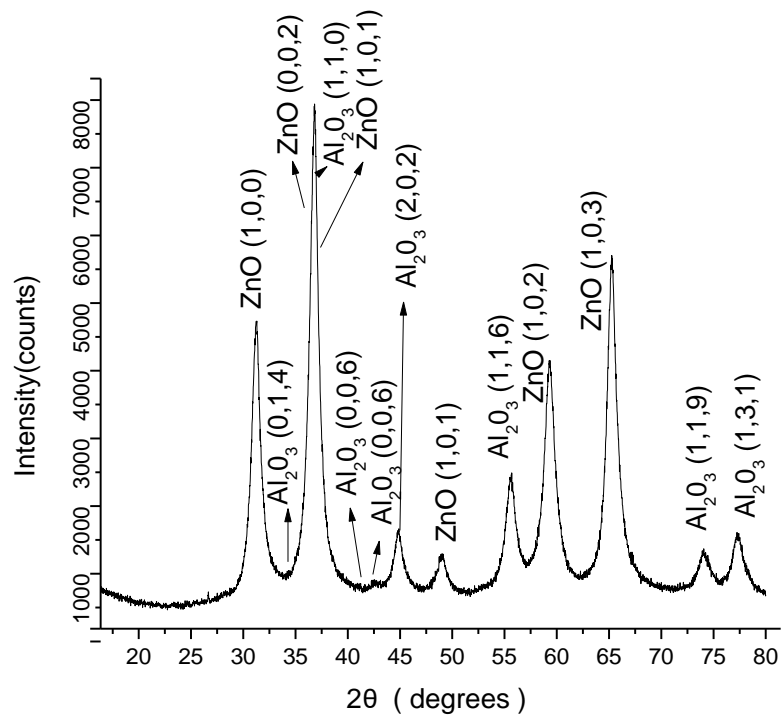
ZnO/TiO₂ from Chitosan precursors



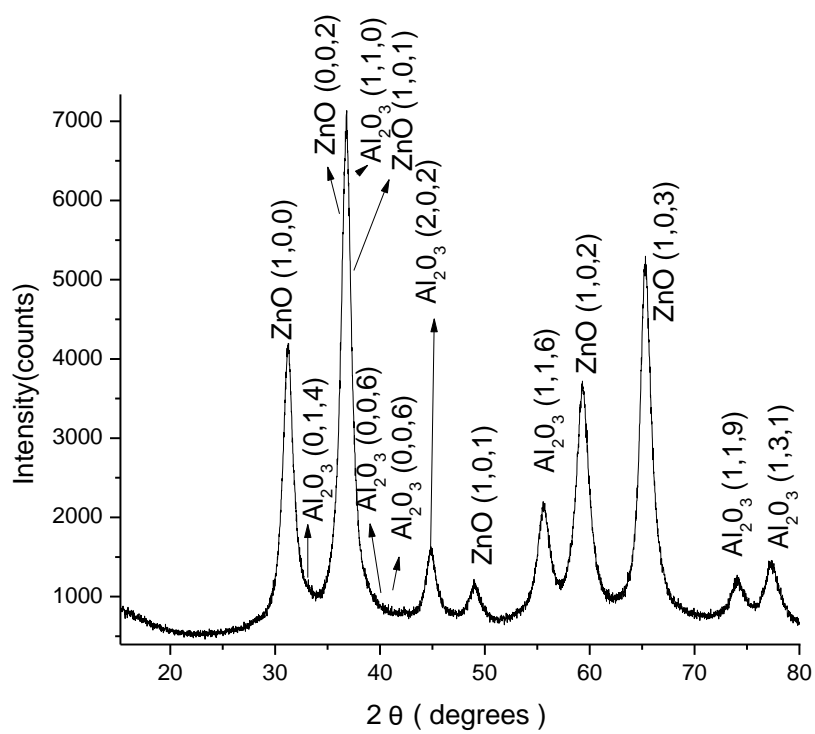
ZnO/TiO₂ from PS-co-4-PVP precursors



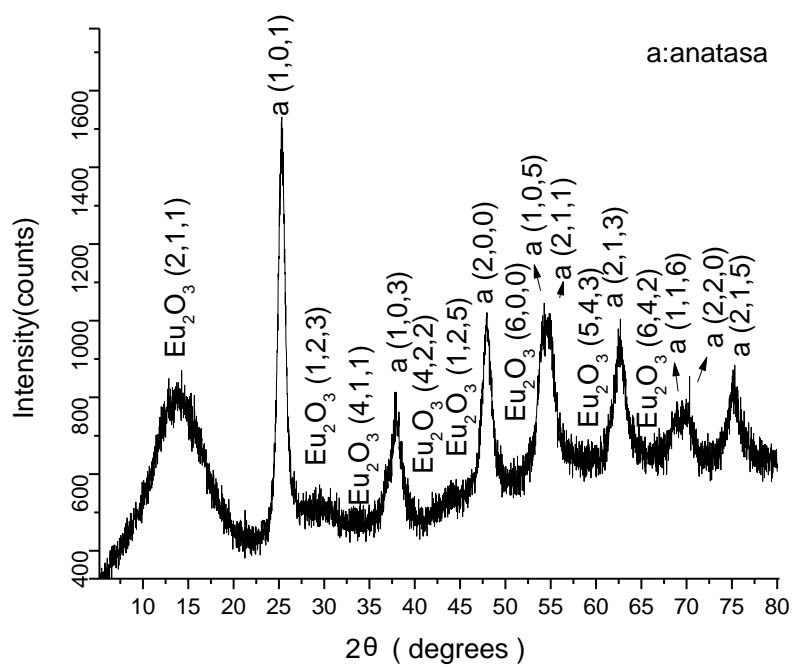
ZnO/Al₂O₃ from Chitosan



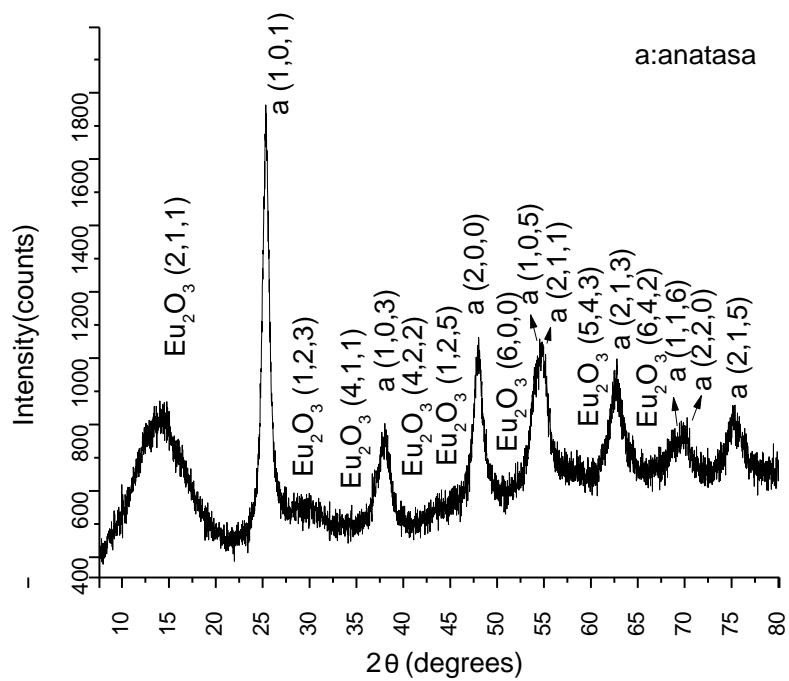
ZnO/Al₂O₃ from PS-co-4-PVP



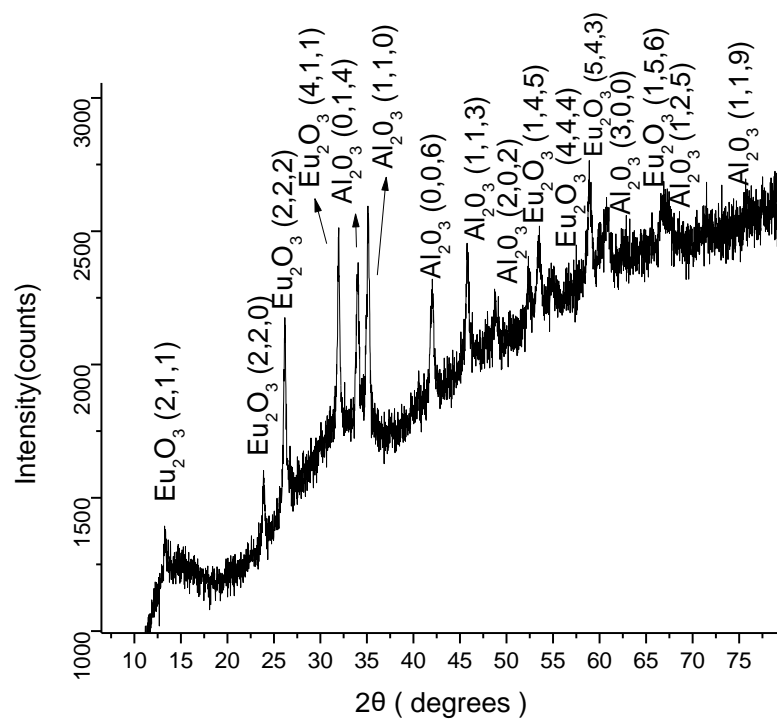
Eu₂O₃/TiO₂ from Chitosan



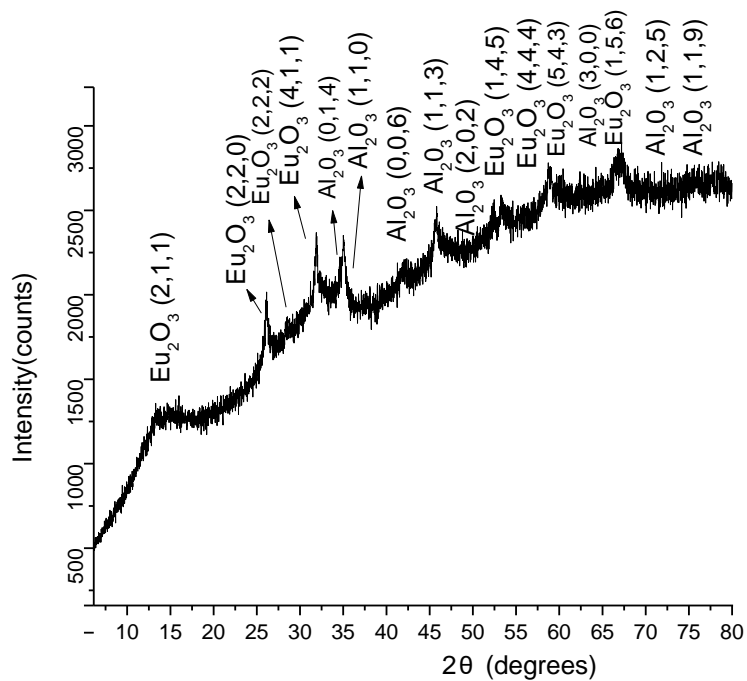
Eu₂O₃/TiO₂ from PS-co-4-PVP



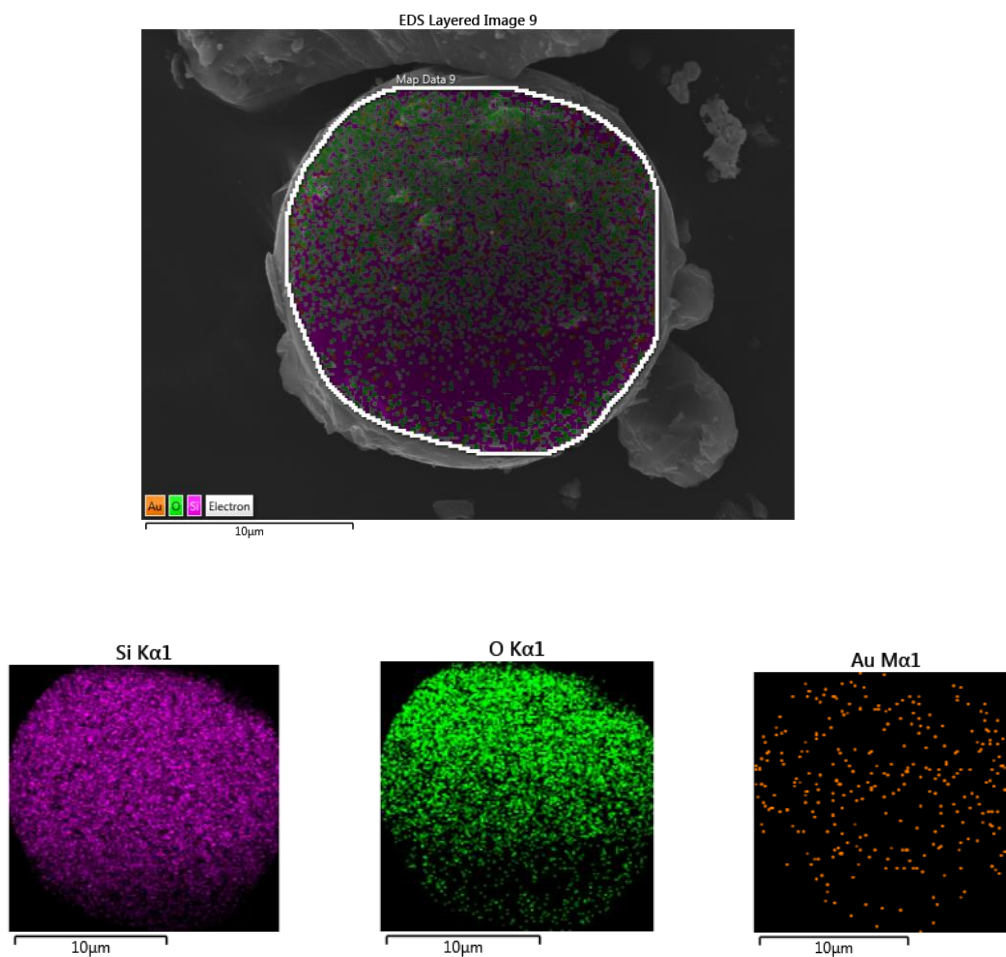
$\text{Eu}_2\text{O}_3/\text{Al}_2\text{O}_3$ from Chitosan



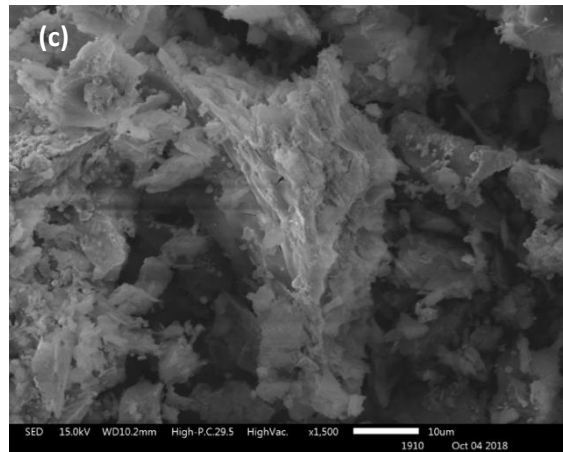
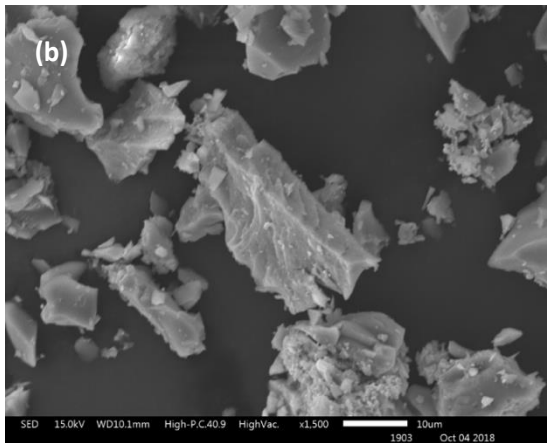
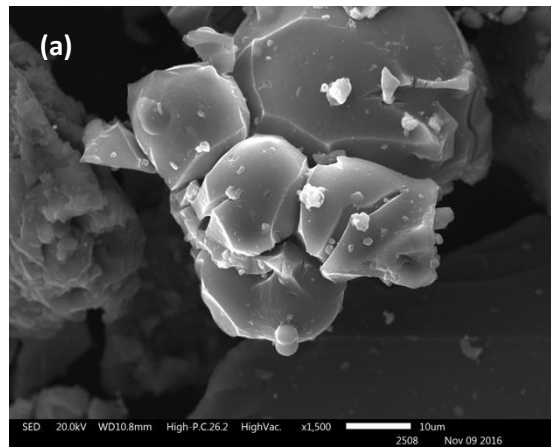
$\text{Eu}_2\text{O}_3/\text{TiO}_2$ from PS-co-4-PVP



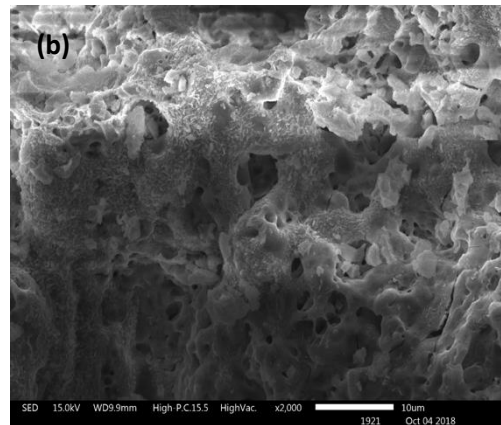
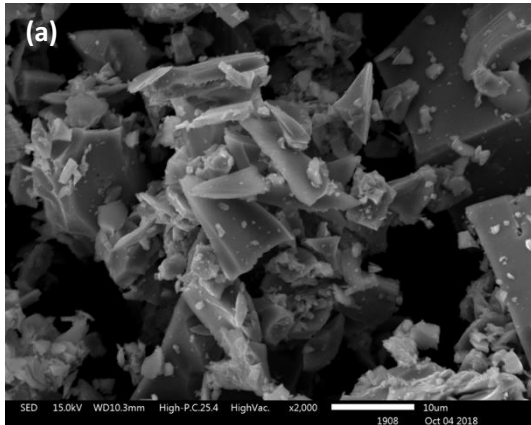
S3 EDS mapping of Au/SiO₂ composite showing the distribution of the Au nanoparticles inside SiO₂. Reproduced from reference 14.



S4 SEM image for the (a) Au/SiO₂, (b) Au/TiO₂, (c) Au/Al₂O₃ composites



S5 Comparación de los SEM del composite (a) $\text{Eu}_2\text{O}_3/\text{TiO}_2$ and (b) $\text{Eu}_2\text{O}_3/\text{Al}_2\text{O}_3$.



S6 SEM image for the composite ZnO/Al₂O₃

