Designing g-C_3N_4/PVP@$Ca(OH)_2$ ternary heterostructure catalysts for efficient degradation of dyes, antibacterial activity, and molecular docking analysis

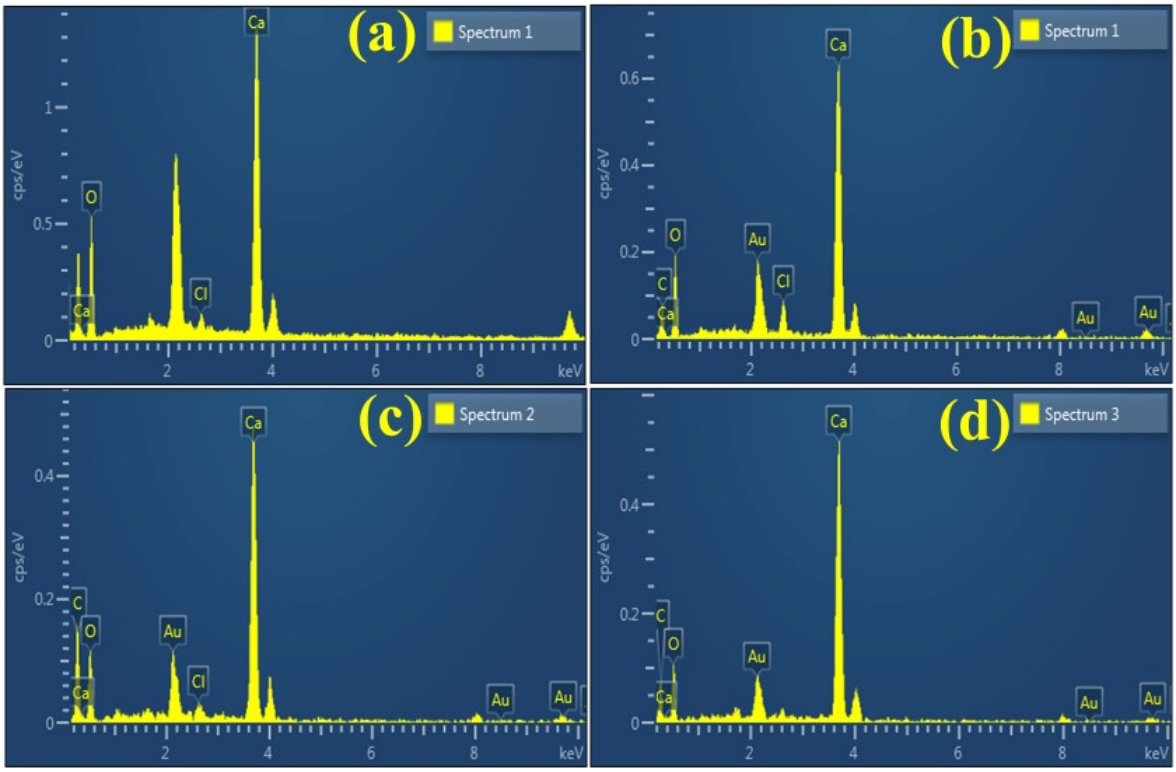

Fig. S1 (a-d) EDS of (a) $Ca(OH)_2$, (b) PVP-$Ca(OH)_2$, (c) 3% g-C_3N_4/PVP-$Ca(OH)_2$, and (d) 6 % g-C_3N_4/PVP-$Ca(OH)_2$

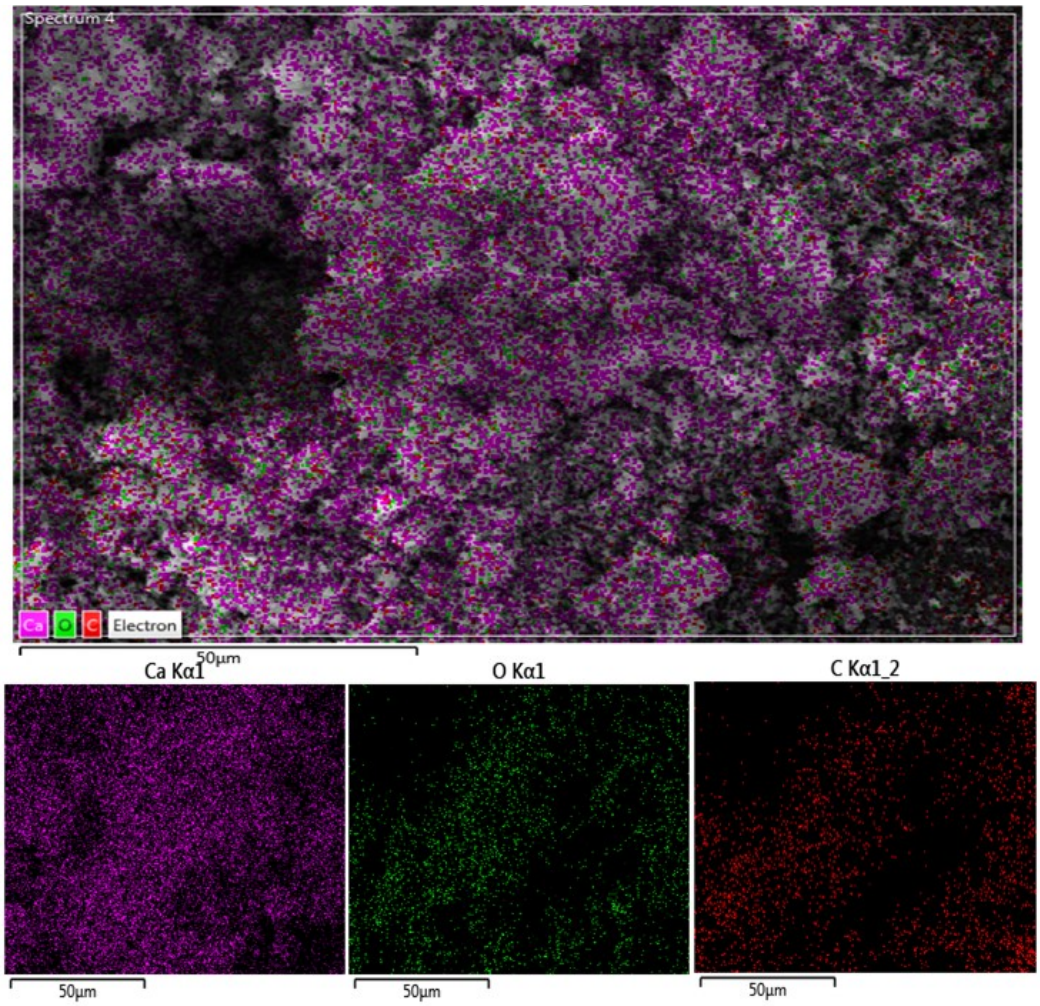

Fig. S2 (a-d) EDS mapping of 6 % g-C_3N_4/PVP-$Ca(OH)_2$

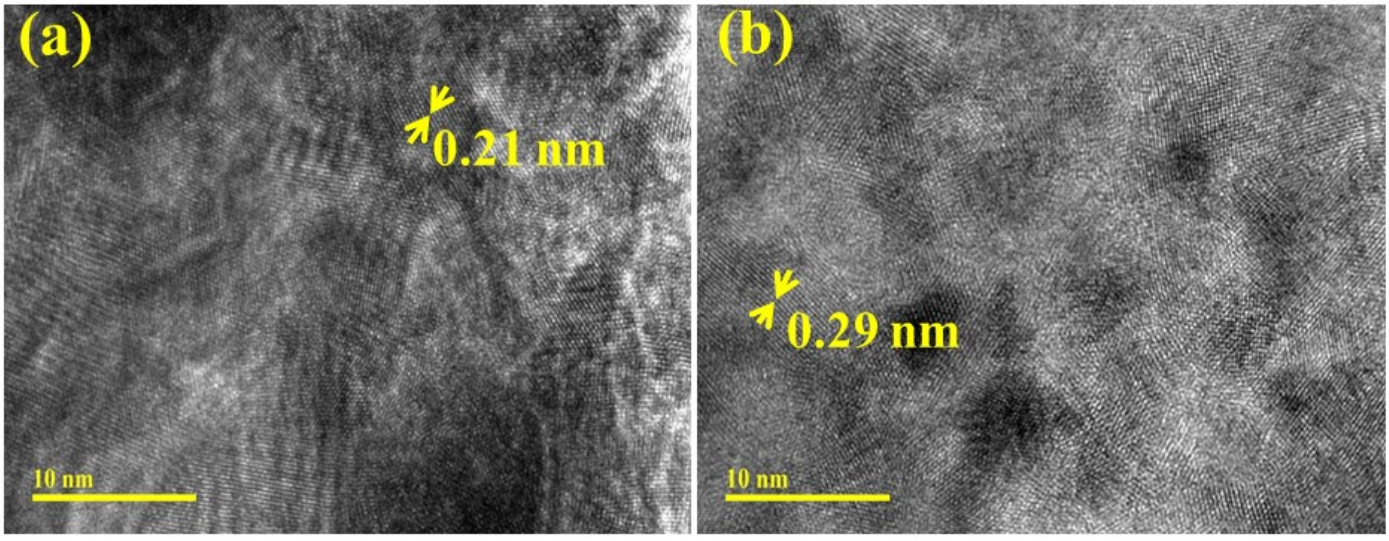

Fig. S3 (a-b) HRTEM images of (a) $Ca(OH)_2$ and (b) 6 % g-C_3N_4/PVP-$Ca(OH)_2$

Table S1: BET surface area of $Ca(OH)_2$ and 6 % g-C_3N_4/PVP- $Ca(OH)_2$

Samples	Correlation Coefficient	BET surface area (m^2/g)
$Ca(OH)_2$	0.9837618	2.1130 ± 0.2757
6 % g-C_3N_4/PVP-$Ca(OH)_2$	0.9941017	2.7305 ± 0.2074

g-$C3N_4$ doped $Ca(OH)_2$ showed 90.1% degrdation of RhB after 10 minutes (Figure S4)

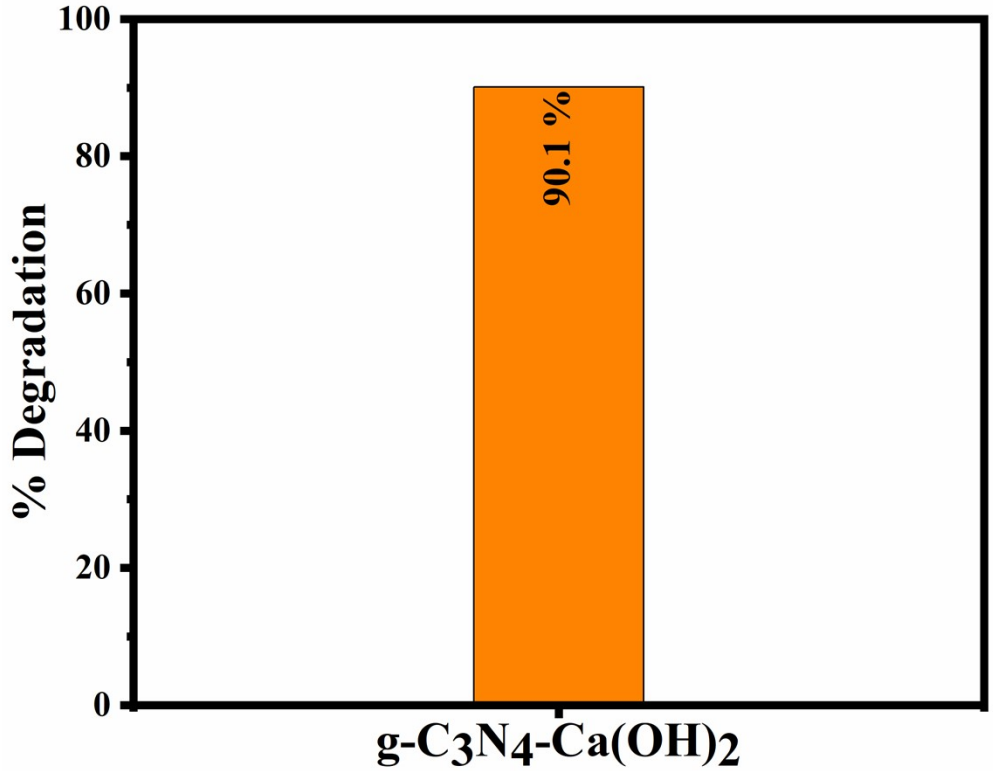

Figure S4: Catalytic activity of g-C_3N_4-$Ca(OH)_2$

Table S2: Comparison of catalytic activity of present work with literature

Catalysts	Synthesis process	Dye	% degradation	References
6% g-C_3N_4/carbon spheres-Bi_2O_3	Co-precipitation	RhB	95.69 (dark)	[1]
Carbon dots/chitosan-La_2O_3	Co-precipitation	RhB	94.57 (in dark)	[2]
N/Fe-TiO_2	Precipitation-hydrothermal	RhB	75 (in light)	[3]
Ag-ZnO	Refluxed chemical method	rose bengal	96 (in light)	[4]
Ag/g-C_3N_4	Biogenic approach	RhB	89 (in light)	[5]
6% g-C_3N_4/PVP-$Ca(OH)_2$	Co-precipitation	RhB	96.4 (in dark)	Present work

Table S3: Comparison of antibacterial activity of present work with literature

Catalysts	Synthesis process	Bacteria	Inhibition zone (mm)	References
6% g-C_3N_4/carbon spheres-Bi_2O_3	Co-precipitation	*E. coli*	2.85	[1]
Carbon dots/chitosan-La_2O_3	Co-precipitation	*E. coli*	4.15	[2]
g-C_3N_4/ eudragit-CdTe	Co-precipitation	*S. aureus*	9.35	[6]
g-C_3N_4	-	*S. aureus*	7	[7]
6% g-C_3N_4/PVP-$Ca(OH)_2$	Co-precipitation	*E. coli*	9.65	Present work

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