Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Electronic Supplementary Information (ESI) for

Graphitic carbon nitride-titania nanocomposite as a promising catalyst support for electro-oxidation of methanol

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X-ray photoelectron spectroscopy

The XPS of the four catalytic composition in the O1s region is shown below.

Fig. S1A shows the XPS of g-C_3N_4 , the peak centered at 533.06 eV is ascribed to the surface adsorbed H_2O on the catalytic surface. The O1s region of TiO_2 nanoparticle is deconvoluted to two peaks centered at 529.9 eV and 532.08 eV showed in fig.S1(B), which are very close to the binding energy values of oxygen attached to Ti and the surface –OH groups respectively. The difference in surface OH from the g-C_3N_4/TiO_2 sample is due to the difference in synthesis condition of TiO2 and g-C_3N_4/TiO_2

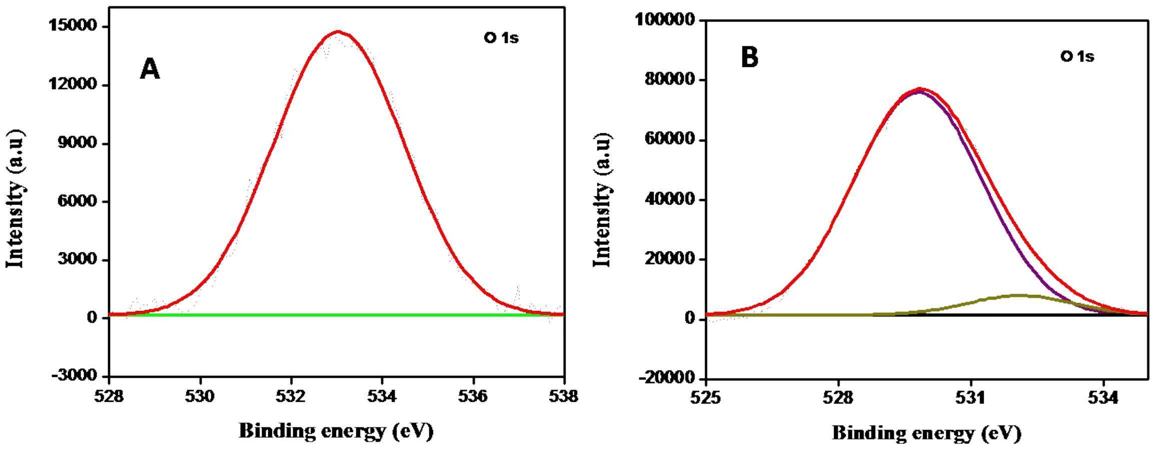

Fig. S1: X-ray photoelectron spectra of A) g-C_3N_4 B) TiO_2 nanoparticles in the O1s region

O1s region of g-C_3N_4/TiO_2 is displayed in fig.S2A, indicates three peaks located at 529.9 eV, 531.5 eV and 533 eV , that can be assigned to the crystal lattice oxygen (Ti-O), surface –OH groups and oxygen in adsorbed water or C-O- bonds. But on calcining the sample at 400˚C (fig.S2 B), a slight shift in the binding energy values was observed and two major peaks positioned at 530.3 eV and 532.1 eV which are attributed to the Ti-O bond and the surface –OH groups[1–8]. The ratio of Ti-O peak (Peak 1) to surface –OH groups (Peak 2) in g-C_3N_4/TiO_2 is 1.76 which is lower than that of g-C_3N_4/TiO_2-400 (2.84) indicates the availability of more number of surface Ti-OH groups of the g-C_3N_4/TiO_2 catalyst which contribute to the enhanced catalytic activity.

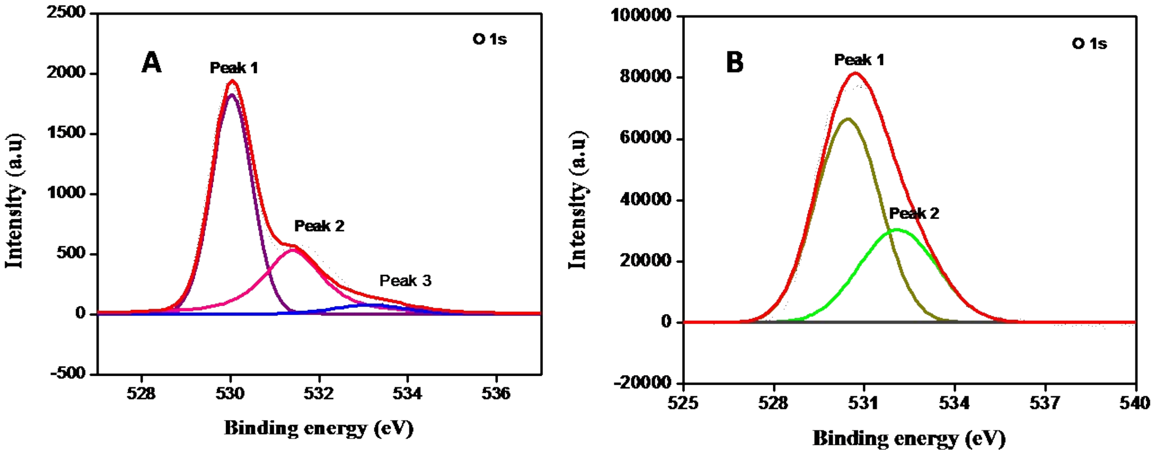

Fig. S2: X-ray photoelectron spectra of A) g-C_3N_4/TiO_2 and B) g-C_3N_4/TiO_2-400 in the O 1s region.

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