Electronic Supplementary Material (ESI) for RSC Advances.

Solar light active Mesoporous Cr-TiO2 for photo-degradation of Spent wash: An in-depth study of degradation reaction using LC-MS QTOF Technique.

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Electronic Supplementary Information (ESI)

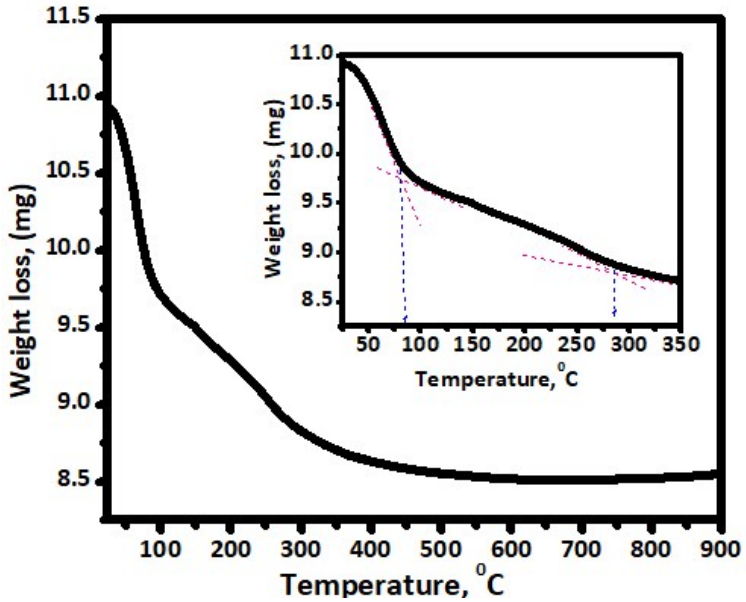


Fig.S1. Thermo-gravimetric analysis of 5% Cr-TiO_2 powdered gel sample.

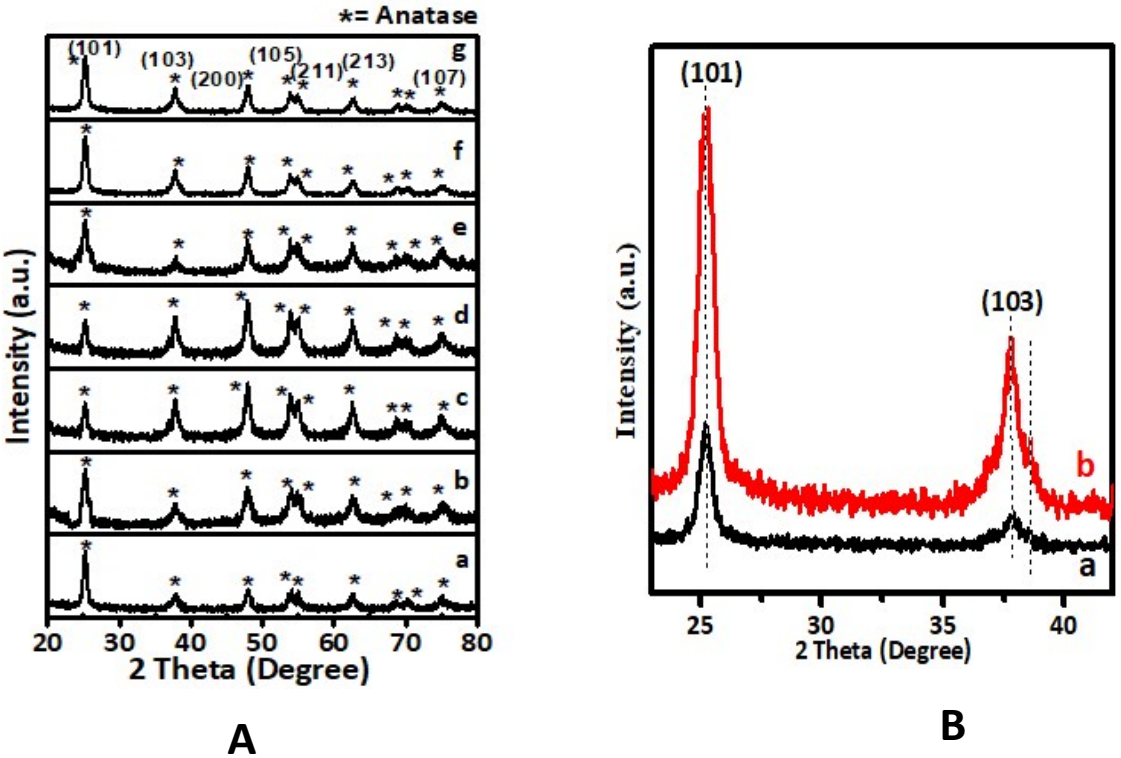


Fig. S2 (A) XRD pattern of (a)Undoped TiO_2 (b) 0.5% Cr-TiO_2 (c) 1% Cr-TiO_2 (d) 2% Cr-TiO_2, (e) 3% Cr-TiO_2, (f) 4% Cr-TiO_2 and (g) 5% Cr-TiO_2 samples obtained by Calcination at 400^{0}C. and (B) Enlarged version XRD pattern of (110) plane (a) Undoped TiO_2 and (b) 5% Cr-TiO_2

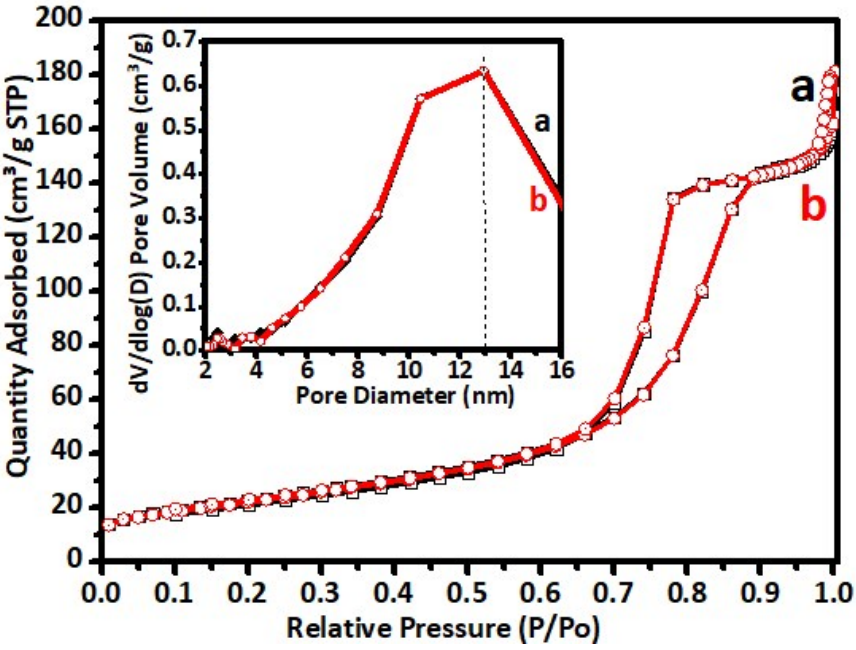
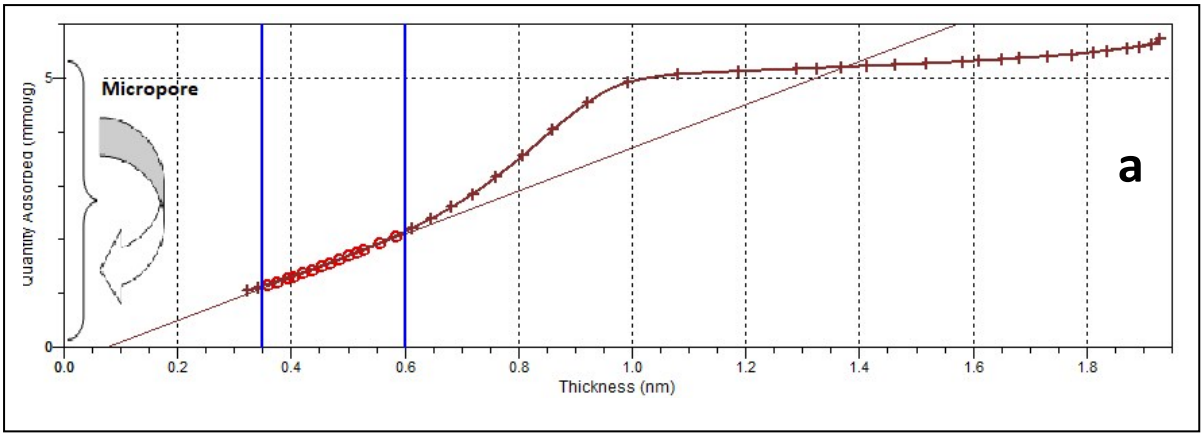


Fig.S3. Nitrogen sorption isotherm of (a) Cr-TiO_2 at 500^0C and (b) Cr-TiO_2 at 600^0C. In inset BJH pore size distribution curve of (a) 5% Cr-TiO_2 at 500^0C and (b) 600^0C of 5% Cr-TiO_2 catalyst



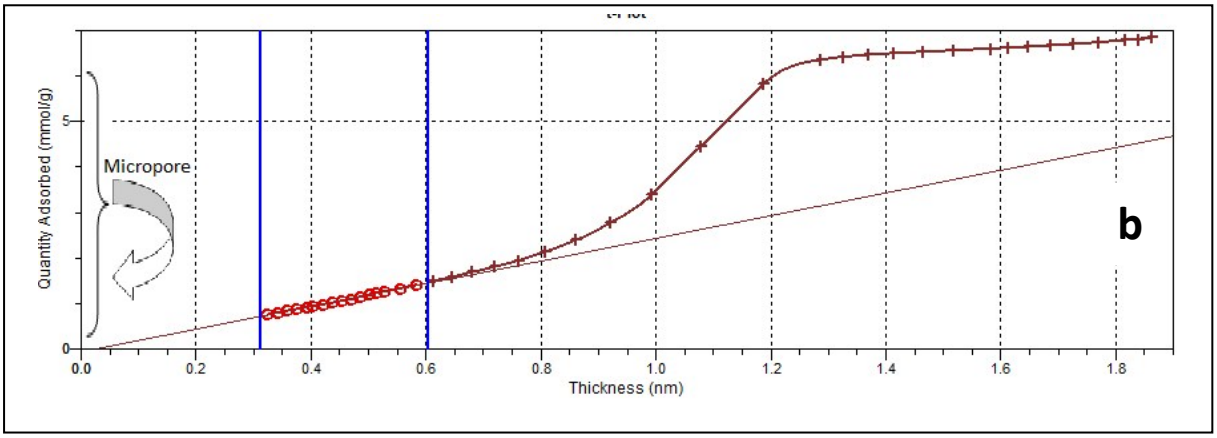


Fig.S4. t plot of mesoporous catalyst (a) Undoped TiO_2. (b) 5% Cr-TiO_2.

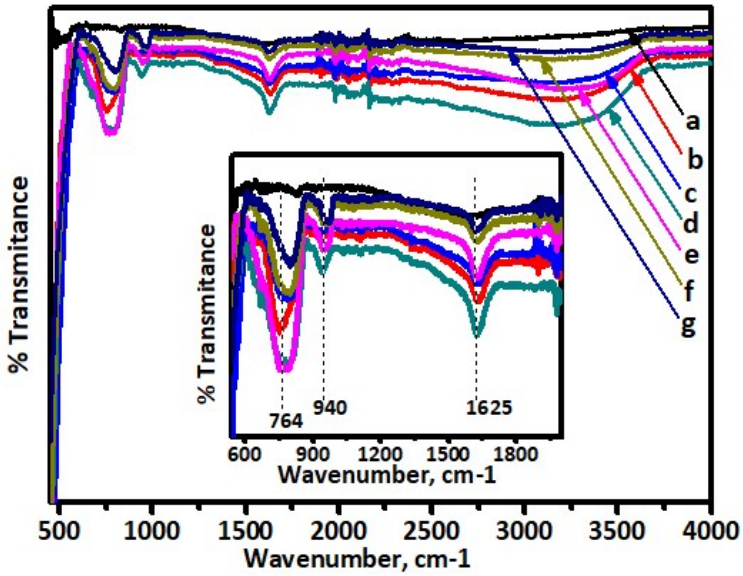


Fig.S5. FT-IR spectra of (a)Undoped TiO_2 (b) 0.5% Cr-TiO_2 (c) 1% Cr-TiO_2 (d) 2% Cr-TiO_2, (e) 3% Cr-TiO_2, (f) 4% Cr-TiO_2 and (g) 5% Cr-TiO_2 samples

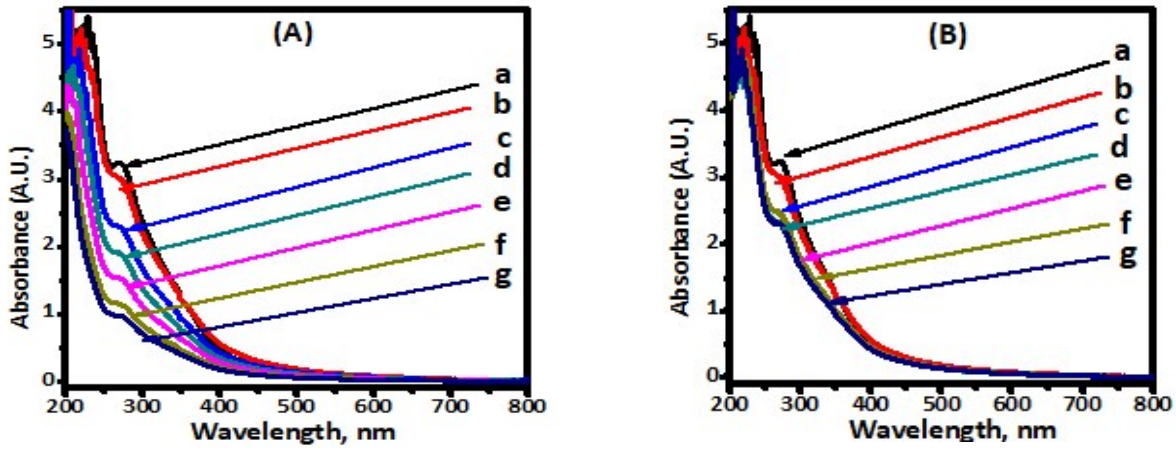


Fig.S6. UV Visible spectra of spentwash solution after irradiation with sunlight (A) for 5% Cr- TiO_2 catalyst and (B) for P-25 Degussa Catalyst for (a) 0 hr, (b) 1 hr, (c) 2 hr, (d) 2.30 hr, (e) 3 hr, (f) 4 hr and (g) 5 hr.

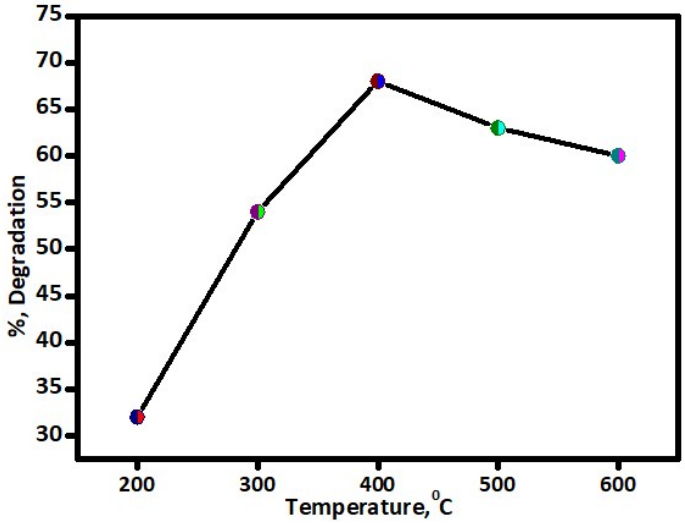


Fig. S7. Degradation of spent wash using 5% Cr-TiO_2 catalyst calcined at different temperature.

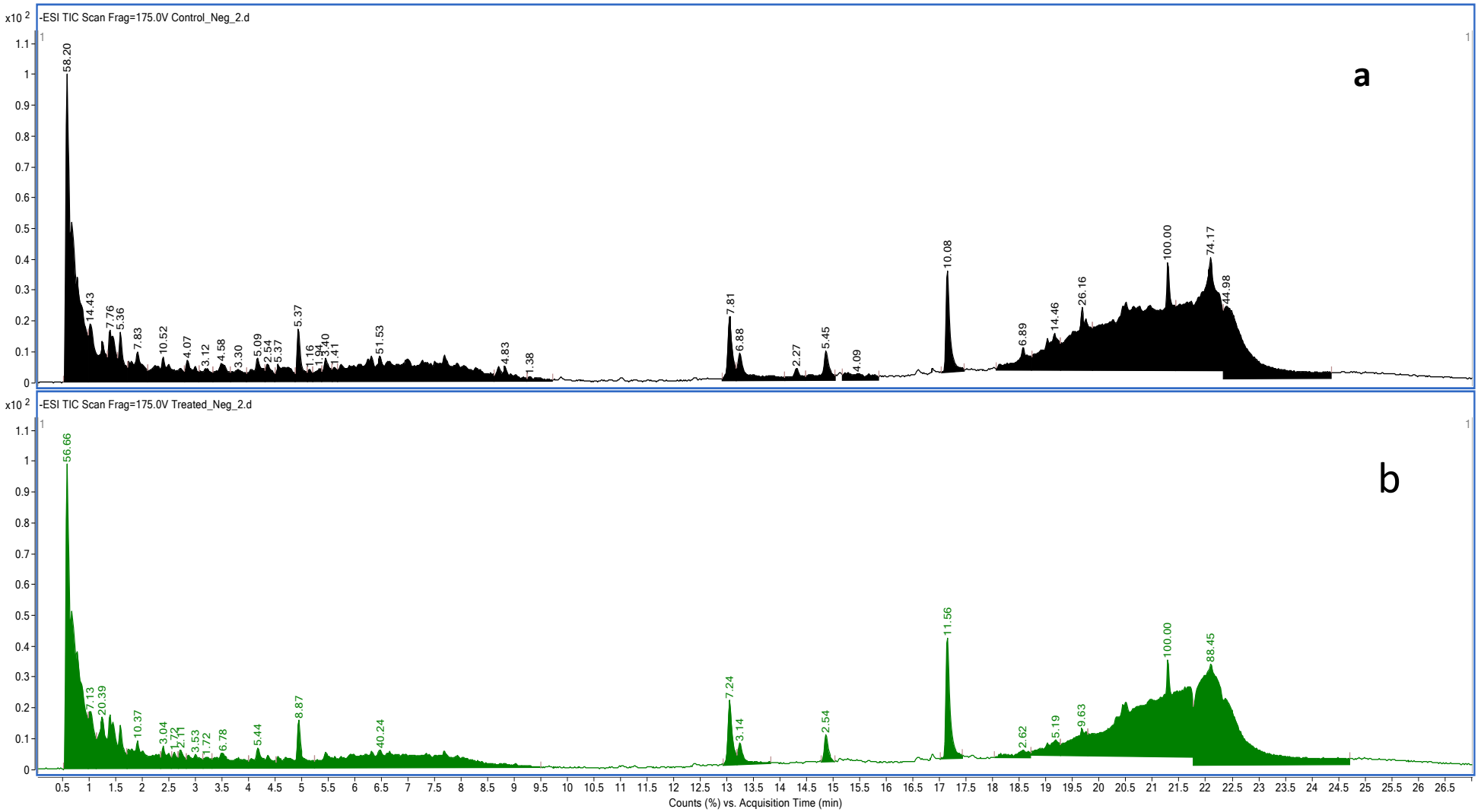


Fig.S8 Negative ESI TIC fragmentation spectra of spentwash after irradiation with sunlight (a) Undoped TiO_2, (b) 5% Cr- TiO_2.

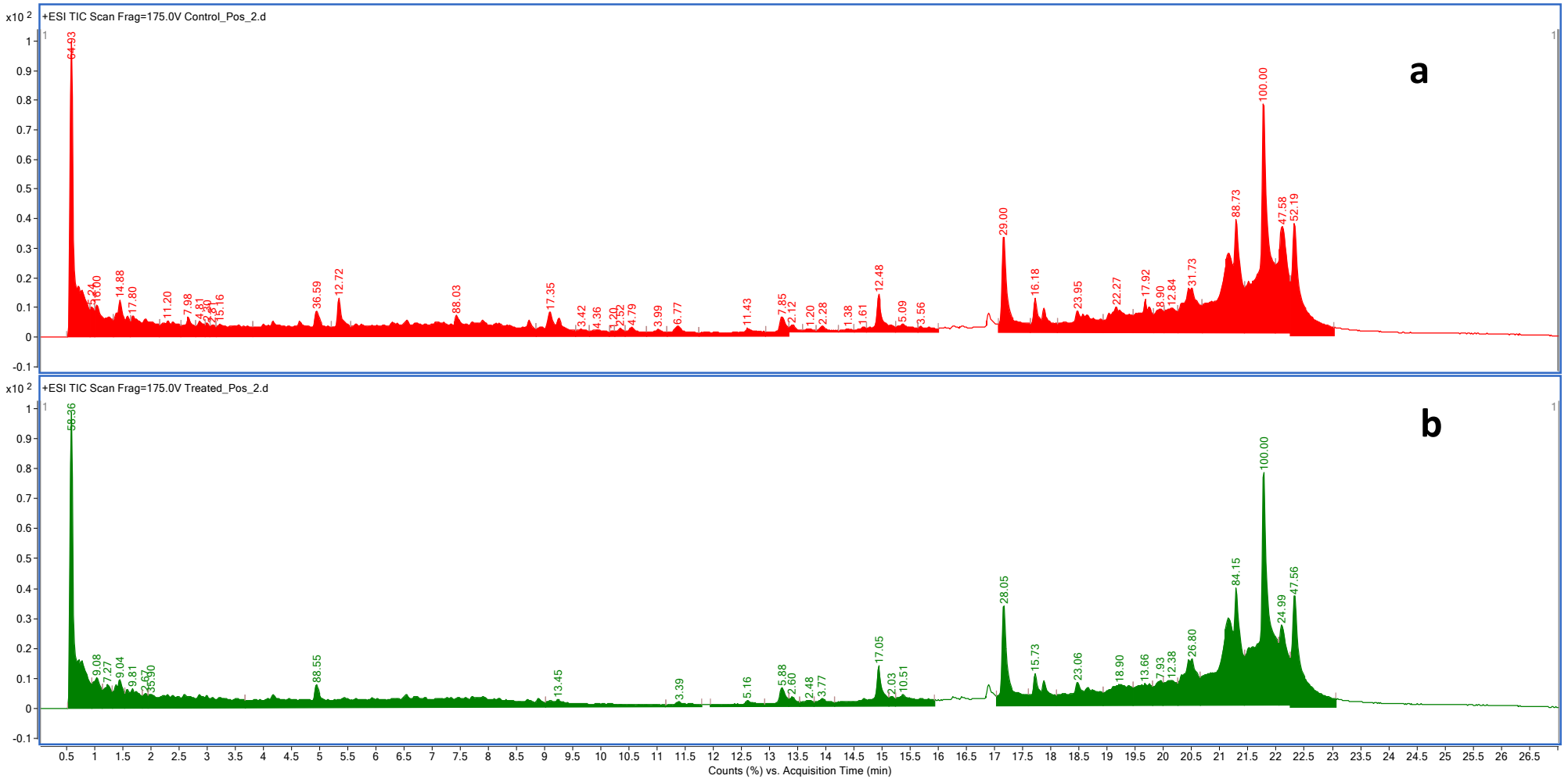


Fig.S9.Positive ESI TIC fragmentation spectra of spentwash after irradiation with sunlight (a) Undoped TiO_2, (b) 5% Cr-TiO_2

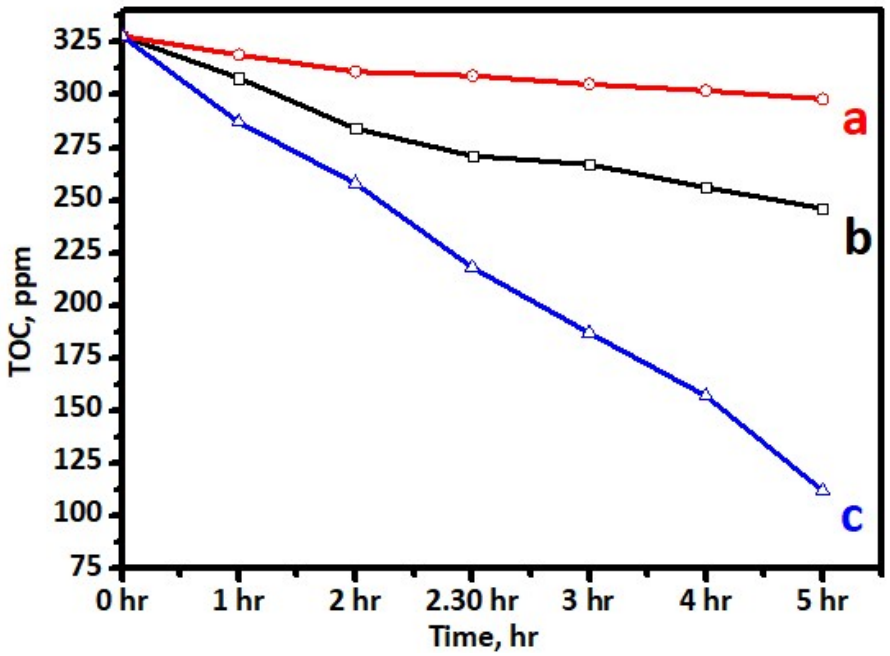


Fig. S10 Reduction of TOC during photocatalytic trial on spentwash for (a) Undoped TiO_2, (b) Degussa P-25, (c) 5% Cr-TiO_2 catalyst.

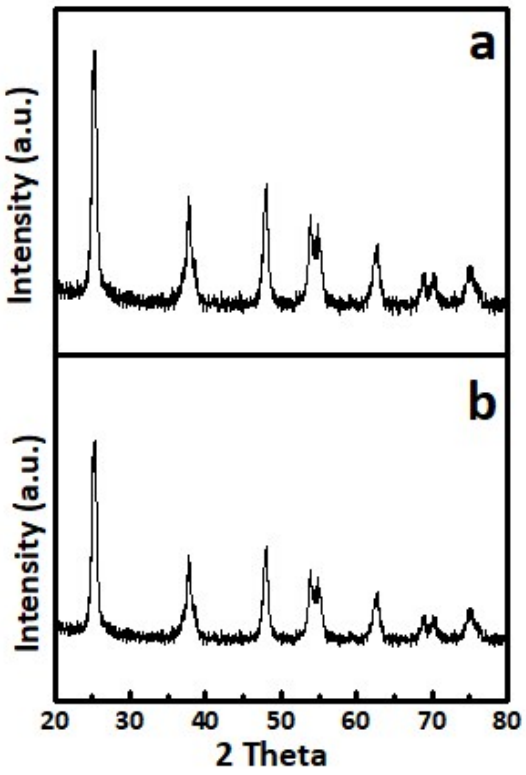


Fig. S11. XRD pattern of (a) 5% Cr-TiO_2 calcined at 400^0C and (b) 5% Cr-TiO_2 recovered after 3rd cycles of photo-degradation of spentwash solution under sunlight

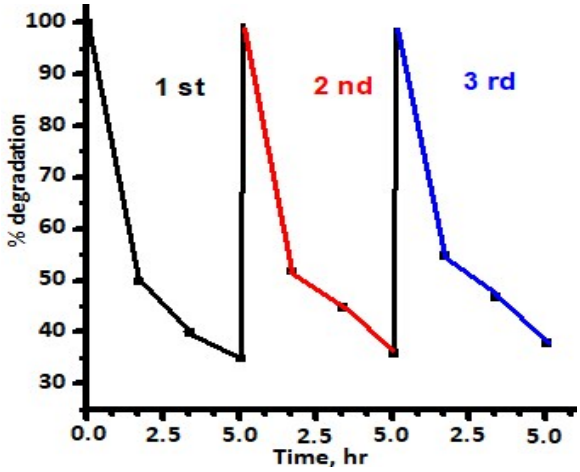


Fig. S12. Degradation of spent wash using 5% Cr-TiO_2 catalyst under natural sunlight for 3 consecutive cycles.

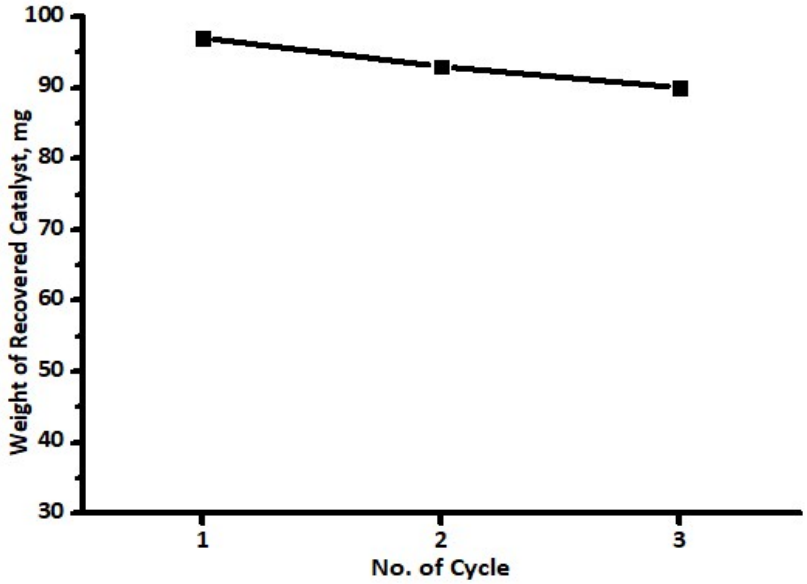


Fig. S13 Recovery of 5% Cr-TiO_2 catalyst with respect to number of cycle.