

Supporting information

Visible Range Optical Absorption, Urbach Energy Estimation and Paramagnetic Response in Cr-Doped TiO₂ Nanocrystals Derived by Sol-Gel Method

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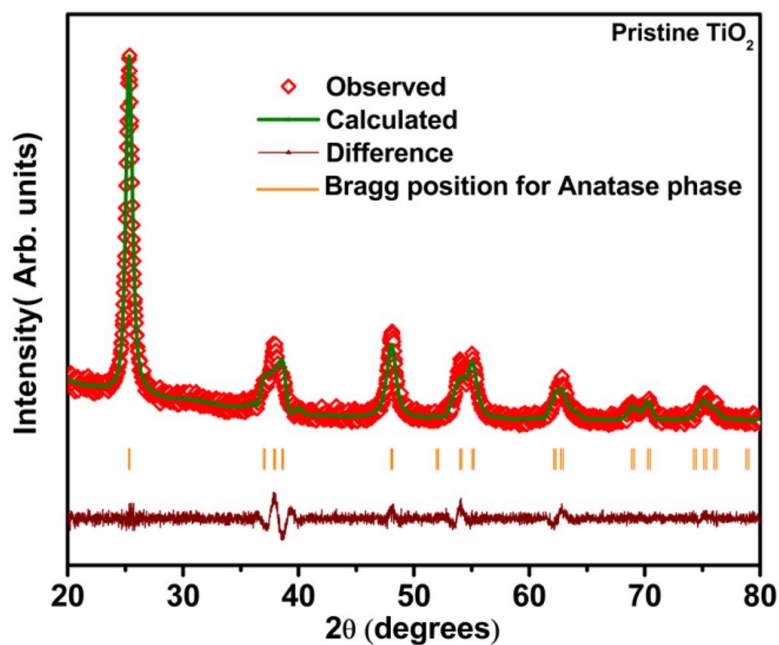


Figure S1. Refined XRD patterns of Pristine TiO₂ nanocrystals

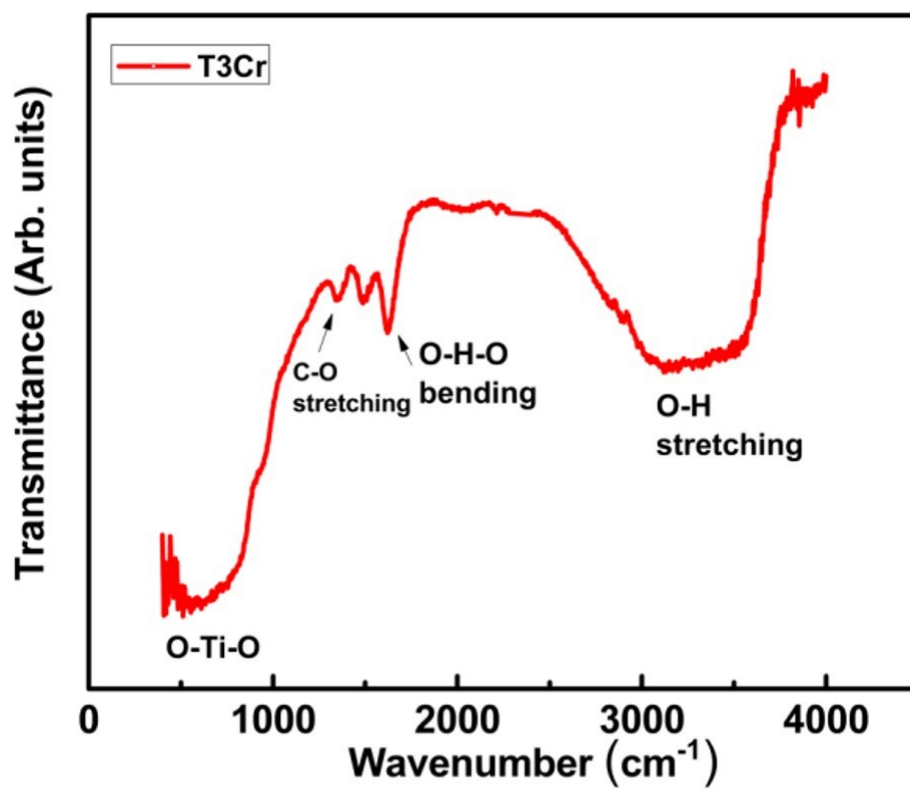


Figure S2. FTIR spectra of T3Cr

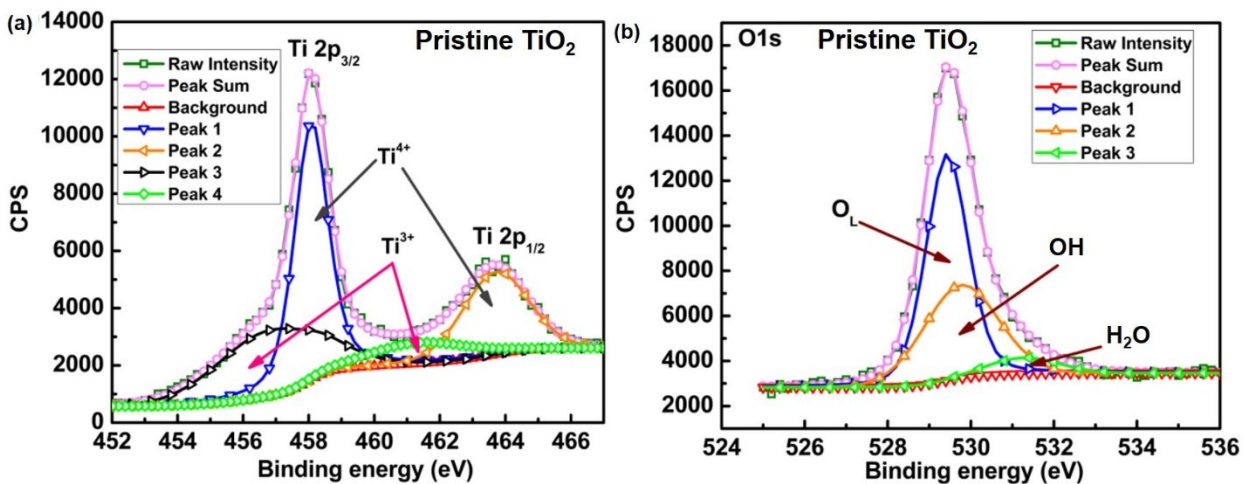


Figure S3. (a) High resolution XPS spectra of (a) Ti 2p and (b) O 1s of Pristine TiO₂

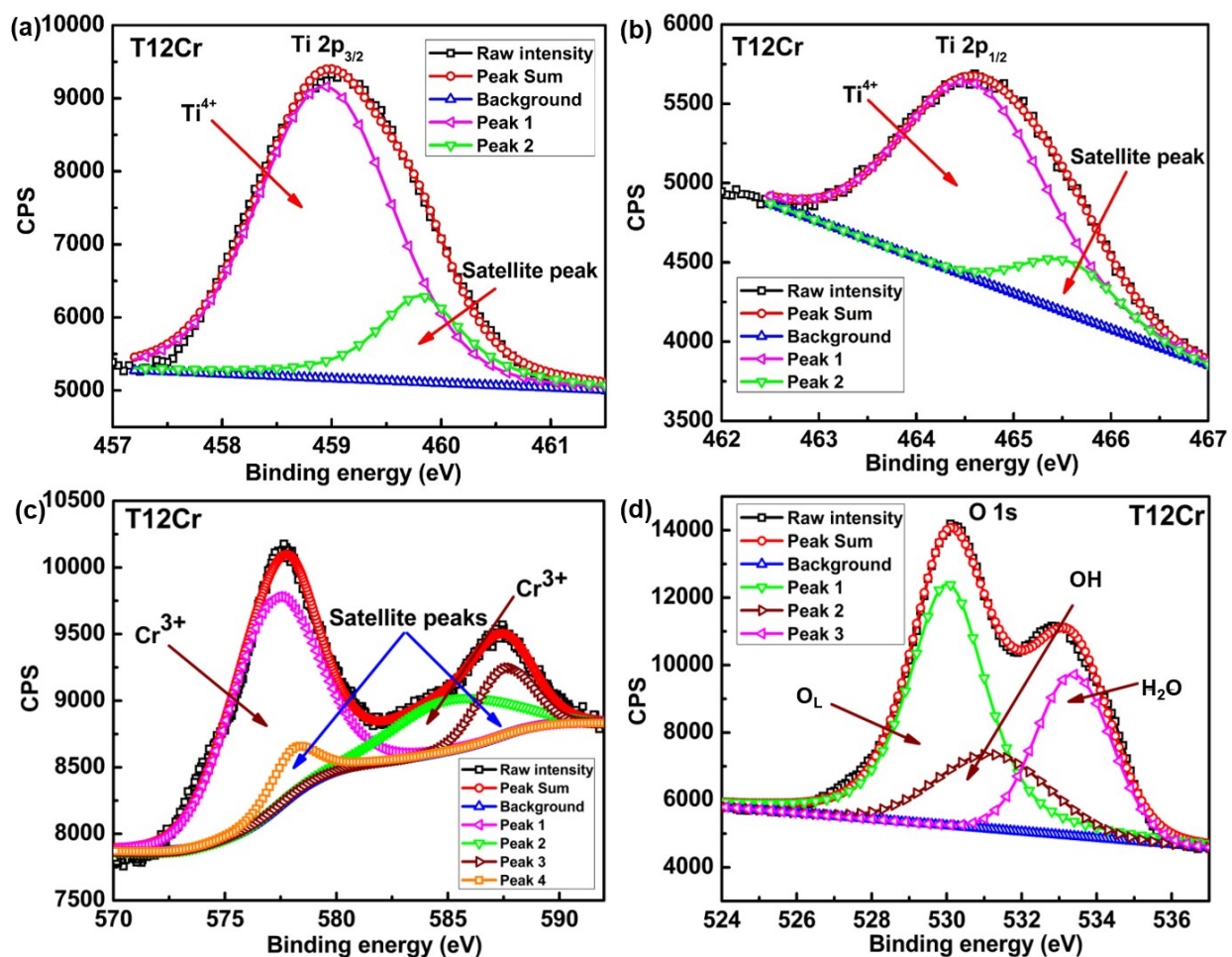


Figure S4. High resolution spectra of (a) Ti 2p_{3/2}, (b) Ti 2p_{1/2} (c) Cr 2p, and (d) O 1s of T12Cr.

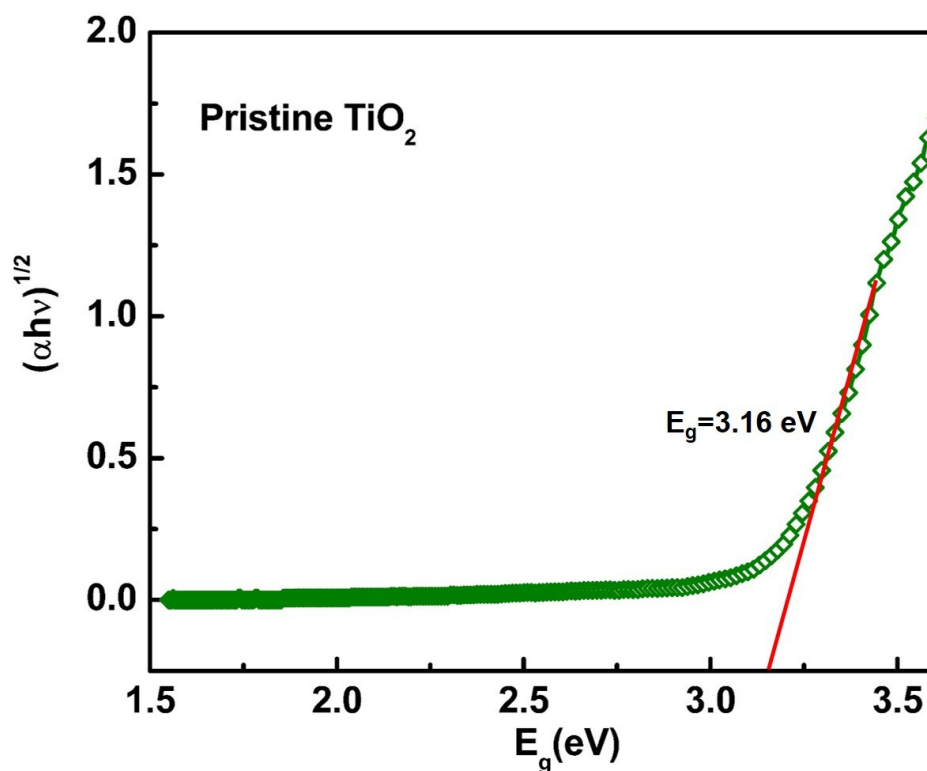


Figure S5. Band Gap estimated from UV spectra of Pristine TiO₂

Table S1: Amount of precursor compounds for the synthesis of Cr-doped TiO₂ nanocrystals (in 8 ml ethanol)

Sample	Amount of C ₁₆ H ₃₆ O ₄ Ti (g)	Amount of CrN ₃ O ₉ .9H ₂ O (g)
T3Cr	7.3414	0.2670
T6Cr	7.1034	0.5331
T9Cr	6.8661	0.7984
T12Cr	6.6296	1.0628

Table S2: Position of (101) peak in pristine and Cr-doped TiO₂

Sample	Position of (101) peak (degrees)
TP	25.3713
T3Cr	25.3690
T6Cr	25.3622
T9Cr	25.3214
T12Cr	25.3146

Table S3: ED-XRFS data obtained for T3Cr, T6Cr, T9Cr and T12Cr

Sample	Percentage of elemental oxide
T3Cr	97.2% TiO ₂ + 2.8% Cr ₂ O ₃
T6Cr	94.3% TiO ₂ + 5.7% Cr ₂ O ₃
T9Cr	91.4% TiO ₂ + 8.6% Cr ₂ O ₃
T12Cr	88.2% TiO ₂ + 11.8% Cr ₂ O ₃