Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Defect Mediated Mechanism in Undoped, Cu and Zn-Doped TiO_2 Nanocrystals for Tailoring the Band gap and Magnetic Properties

V. R. Akshay[1, 2], B. Arun[1, 2], Shubhra Dash[3], Ajit K. Patra[3], Guruprasad Mandal[4], Geetah. R. Mutta[5], Anupama Chanda[6*] and M.Vasundhara[1, 2*]

[1]*Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Trivandrum -695 019, India.*

[2]*Academy of Scientific and Innovative Research (AcSIR), CSIR, Trivandrum, India.*

[3]*Department of Physics, Central University of Rajasthan*

[4] *Centre for Rural and Cryogenic Technologies, Jadavpur University, Kolkata-700032*

[5]*Nano-Materials Laboratory, School of Engineering and Physical Sciences, Heriot Watt University, Edinburgh EH14 4AS, United Kingdom*

[6]*Department of Physics, Dr Hari Singh Gour Central University, Sagar, India*

[*]Corresponding author: mvas@niist.res.in, anupamamatsc@gmail.com

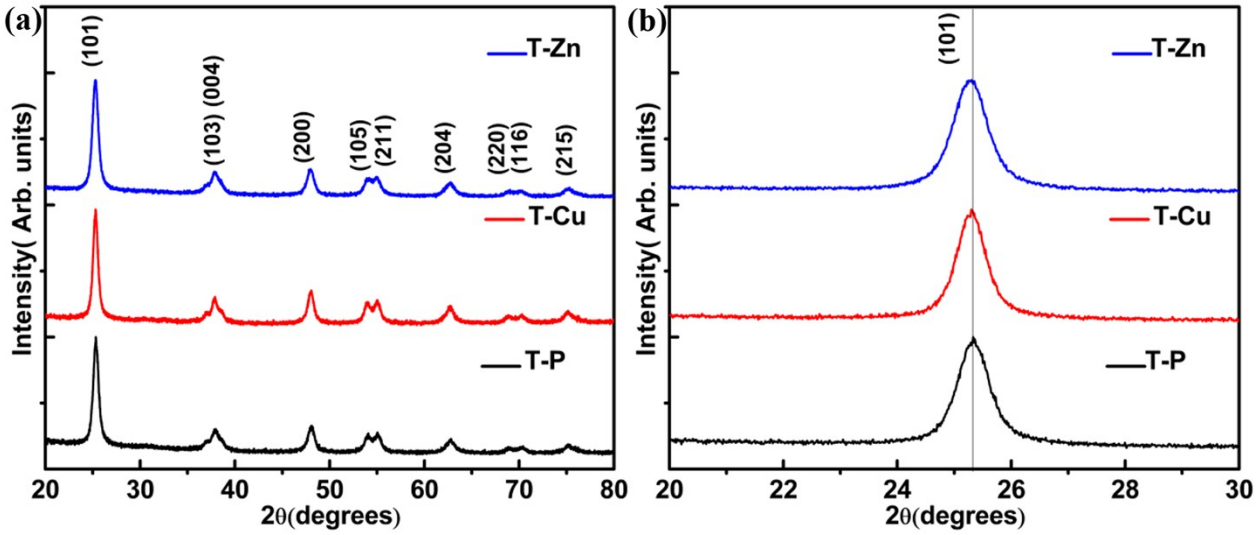

Fig.S1: (a) Indexed XRD patterns of anatase T-P, T-Cu and T-Zn (b) peak shift associated with T-P, T-Cu and T-Zn

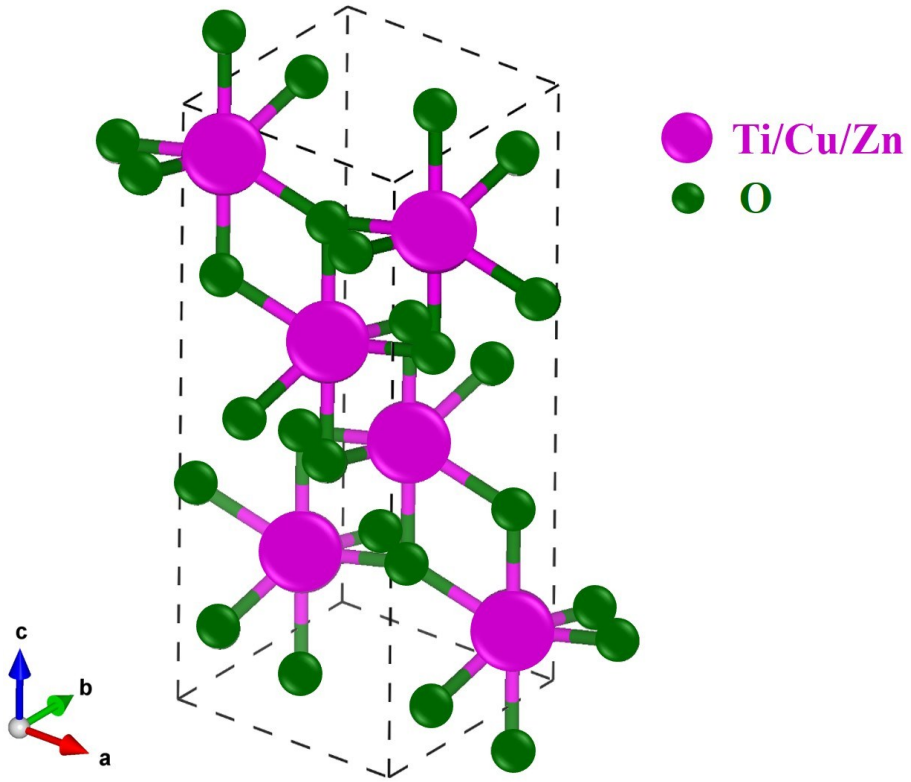

Fig.S2: Crystal structure of anatase TiO_2

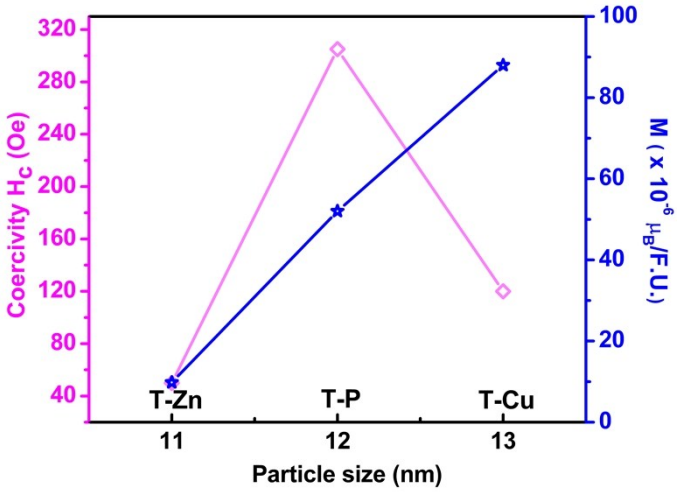

Fig.S3: Variation of coercivity and magnetization with particle size

Table S1: FTIR spectra of different vibration bands of T-P, T-Cu and T-Zn

Vibration modes (cm^{-1})	**T-P**	**T-Cu**	**T-Zn**
O-Ti-O stretching	551	553	557
O-H-O bending	1630	1630	1630
O-H stretching	3455	3501	3504
C-O stretching	1384	1384	1384
CO_2 molecules in air	2347	2347	2347