

Computational Insights into the Structural and Electronic Properties of First-Row Transition Metal-Doped In₂O₃ Systems

Ling Meng,^{ab} Francesc Viñes^a and Francesc Illas^{*a}

^a *Departament de Ciència de Materials i Química Física & Institut de Química Teòrica i Computacional (IQTUB), Universitat de Barcelona, c/ Martí i Franquès 1-11, 08028, Barcelona, Spain.*

^b *State Key Laboratory of Chemical Resource Engineering, Beijing Engineering Center for Hierarchical Catalysts, College of Chemistry, Beijing University of Chemical Technology, Beijing 100029, China.*

* Corresponding authors: francesc.illas@ub.edu

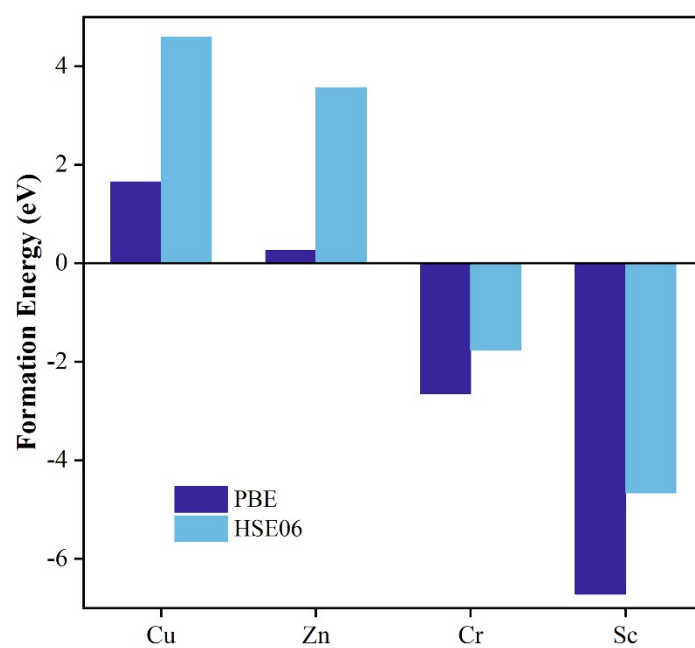


Figure S1. Comparison of formation energy calculated with PBE and HSE06 functionals.

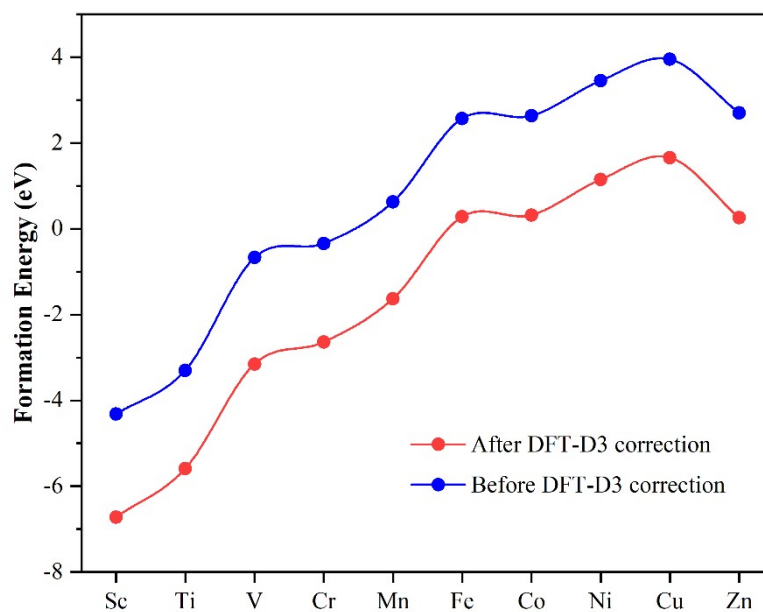


Figure S2. Comparison of formation energies for 3d TM-doped In_2O_3 calculated without (top points) and with (bottom points) DFT-D3 dispersion correction.

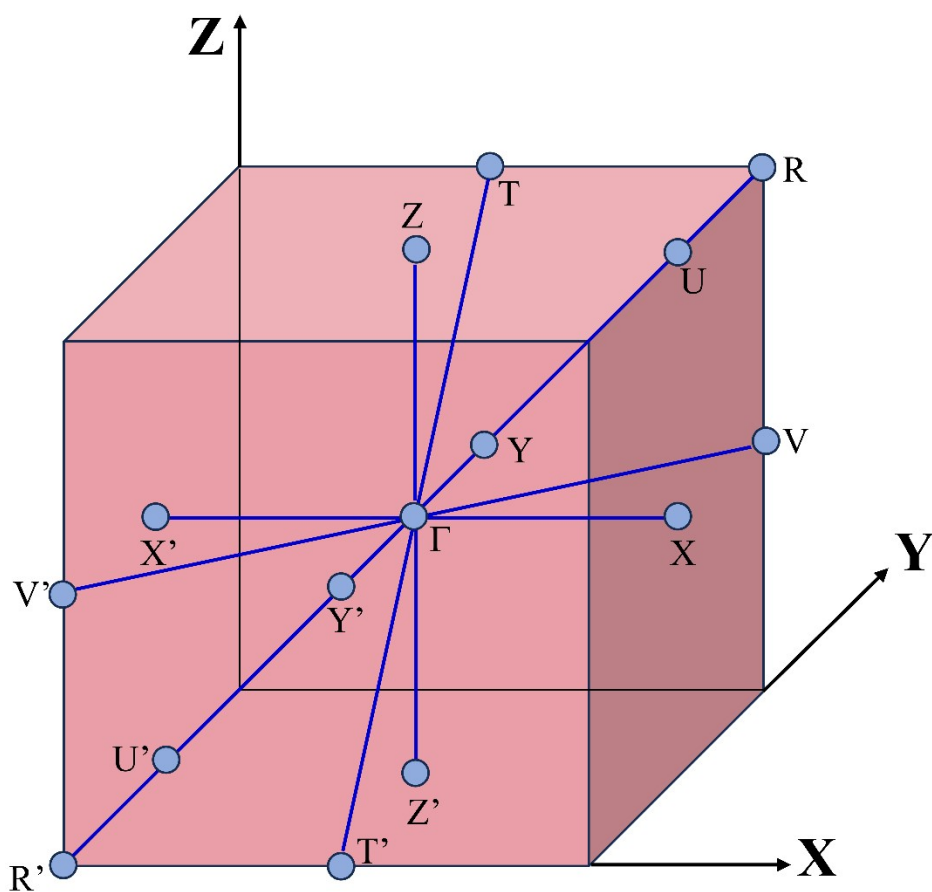


Figure S3. High-symmetry k -paths in the reciprocal space of Sc-doped In_2O_3 .

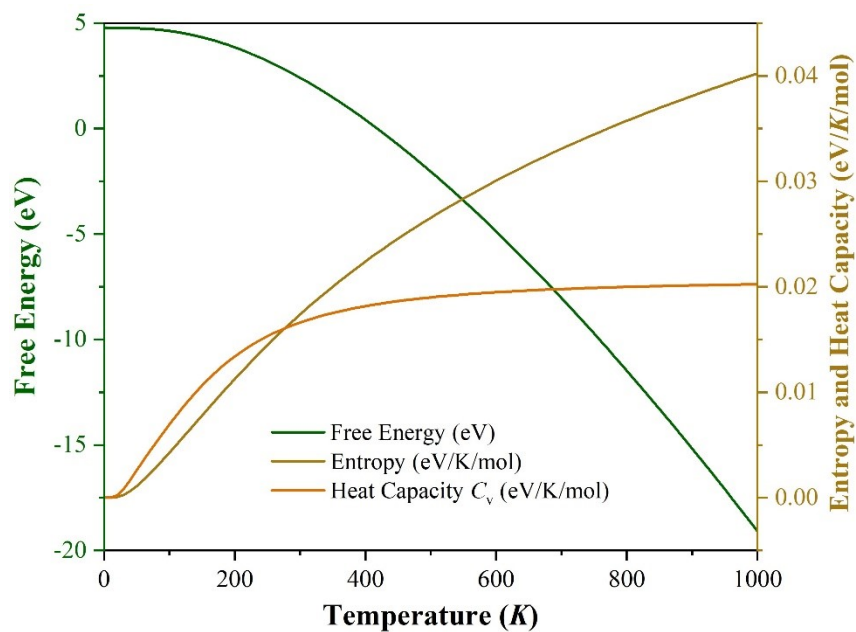


Figure S4. Thermodynamic properties of Sc-doped In_2O_3 as a function of temperature. The green curve is the Helmholtz free energy (left Y-axis), the brown curve is the entropy (right Y-axis), and the orange curve is the heat capacity C_v (right Y-axis).