

Supplementary Material

Title: Synthesis of ErTiNTs, characterization and evaluation of structural and optical properties under heat treatment in different atmospheres

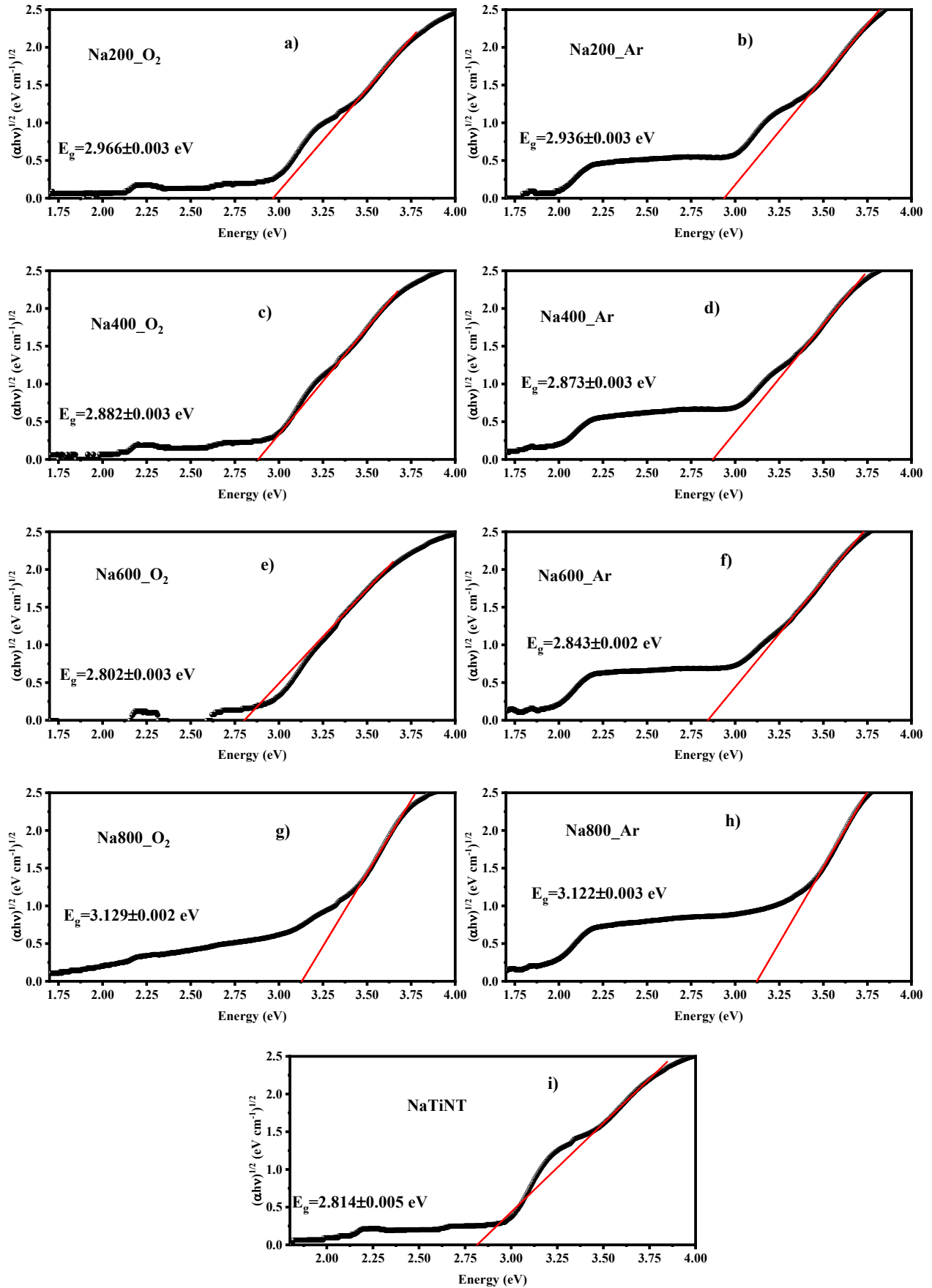


Figure S1: The estimation of the band gap by Tauc plots of the NaTiNT_O₂ and NaTiNT_Ar samples: a) Na200_Ar, b) Na200_O₂, c) Na400_O₂, d) Na400_Ar, e) Na600_O₂, f) Na600_Ar, g) Na800_O₂, h) Na800_Ar and i) NaTiNT.

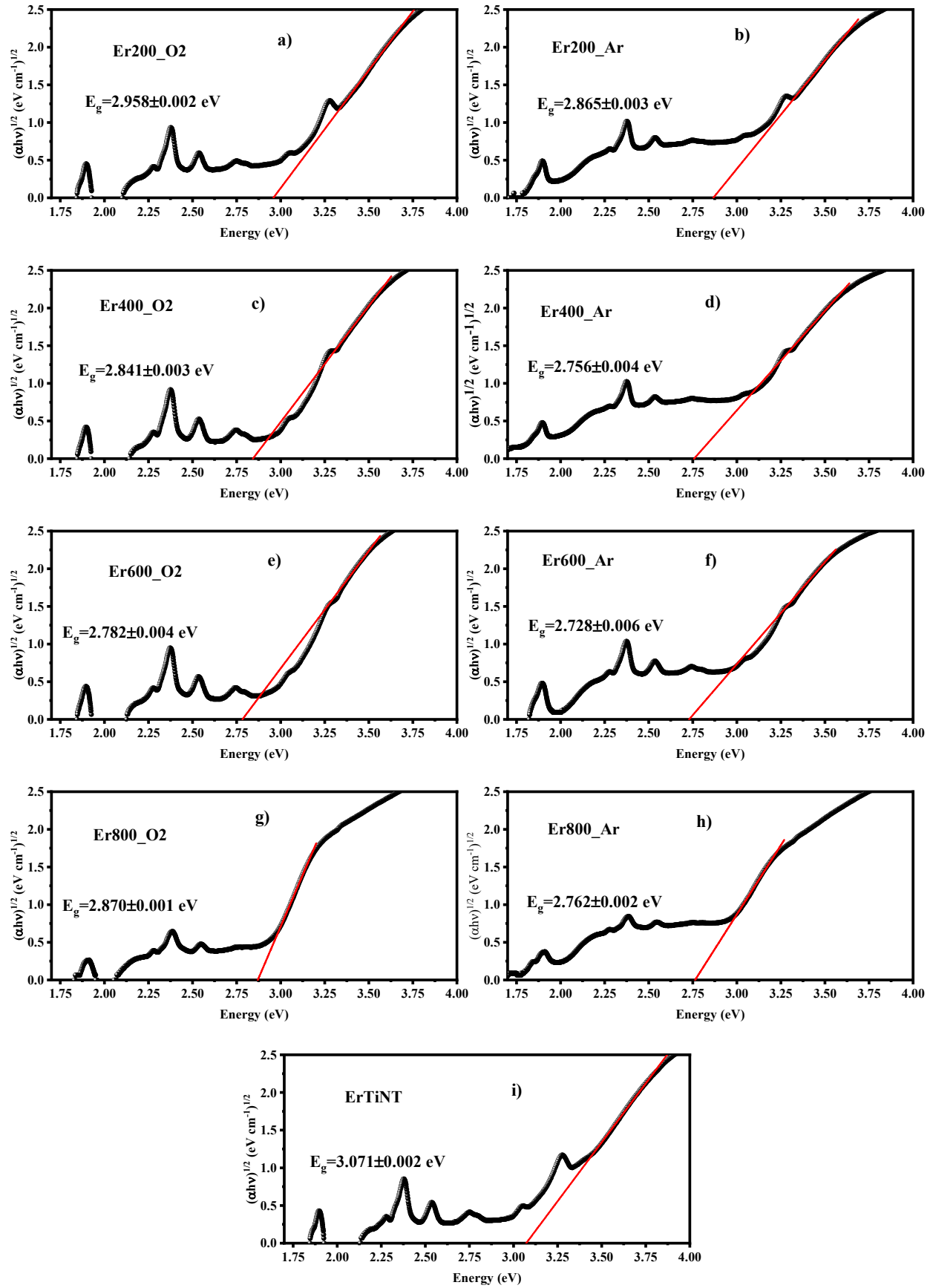


Figure S2: The estimation of the band gap by Tauc plots of the ErTiNT_{0.2} and ErTiNT_{0.8} samples: a) Er200_Ar, b) Er200_O₂, c) Er400_O₂, d) Er400_Ar, e) Er600_O₂, f) Er600_Ar, g) Er800_O₂, h) Er800_Ar and i) ErTiNT.

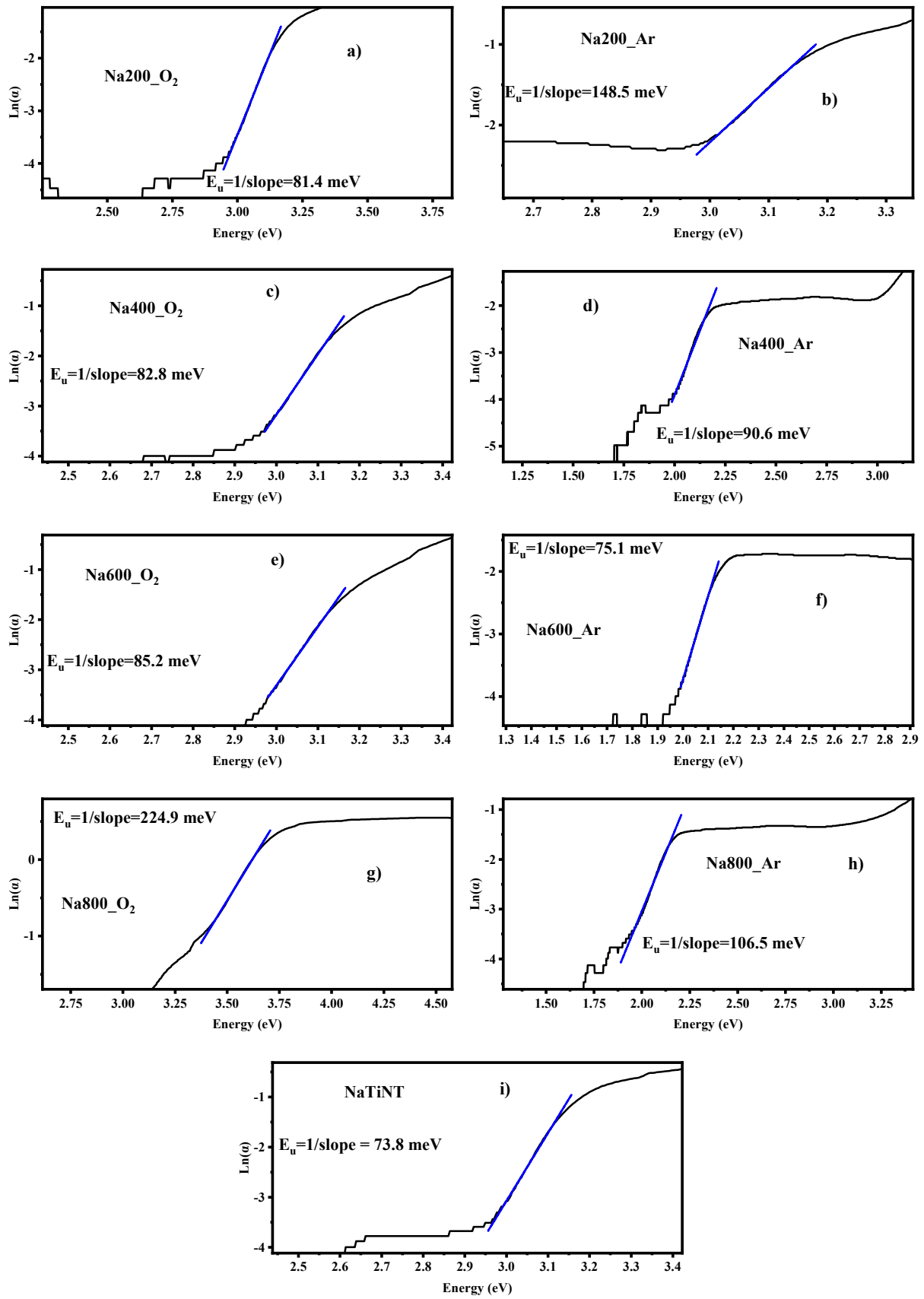


Figure S3: Determination of Urbach energy of NaTiNT_O₂ and NaTiNT_Ar samples: a) Na200_Ar, b) Na200_O₂, c) Na400_O₂, d) Na400_Ar, e) Na600_O₂, f) Na600_Ar, g) Na800_O₂, h) Na800_Ar and i) NaTiNT.

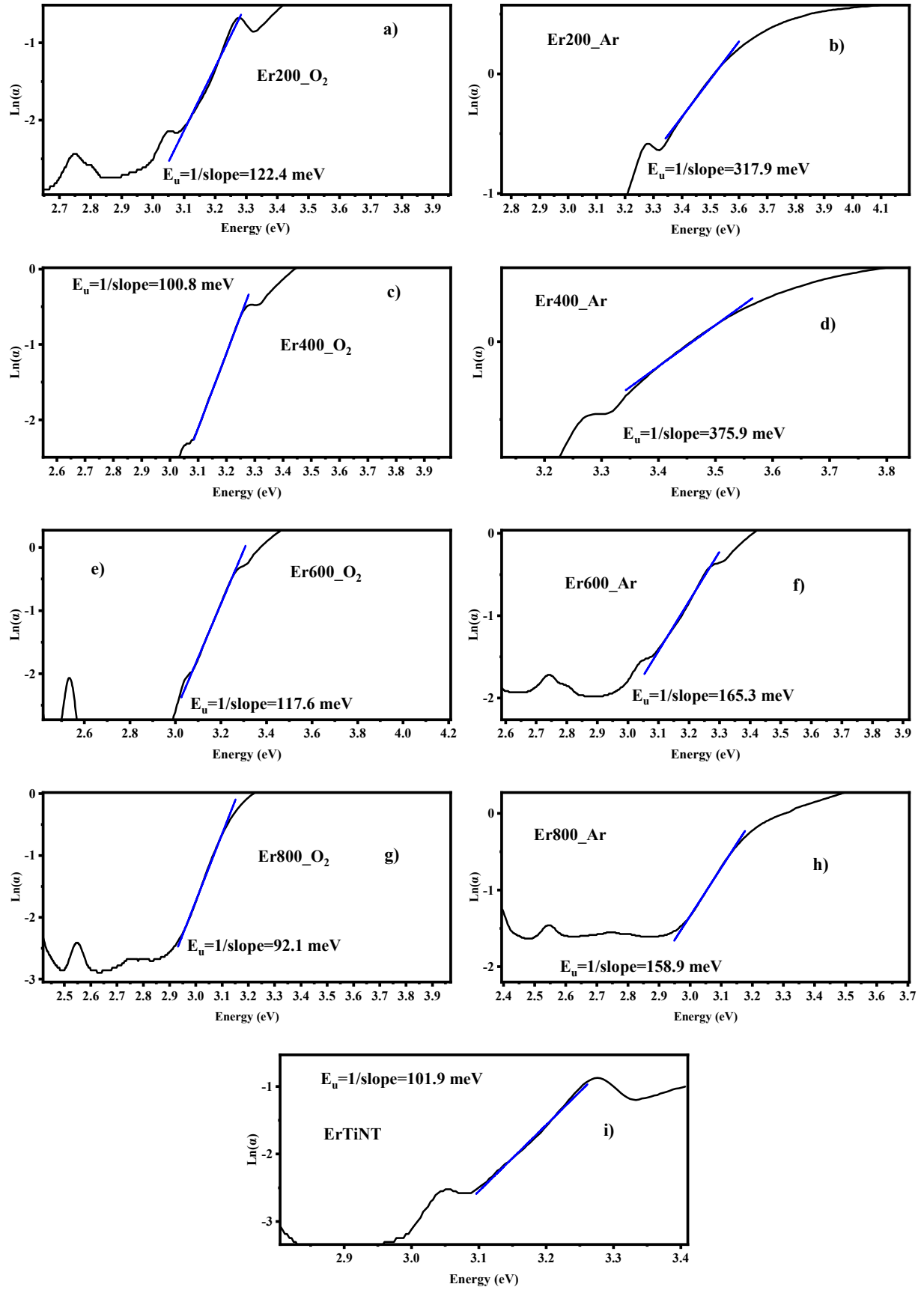


Figure S4: Determination of Urbach energy of ErTiNT_O₂ and ErTiNT_Ar samples: a) Er200_Ar, b) Er200_O₂, c) Er400_O₂, d) Er400_Ar, e) Er600_O₂, f) Er600_Ar, g) Er800_O₂, h) Er800_Ar and i) ErTiNT.

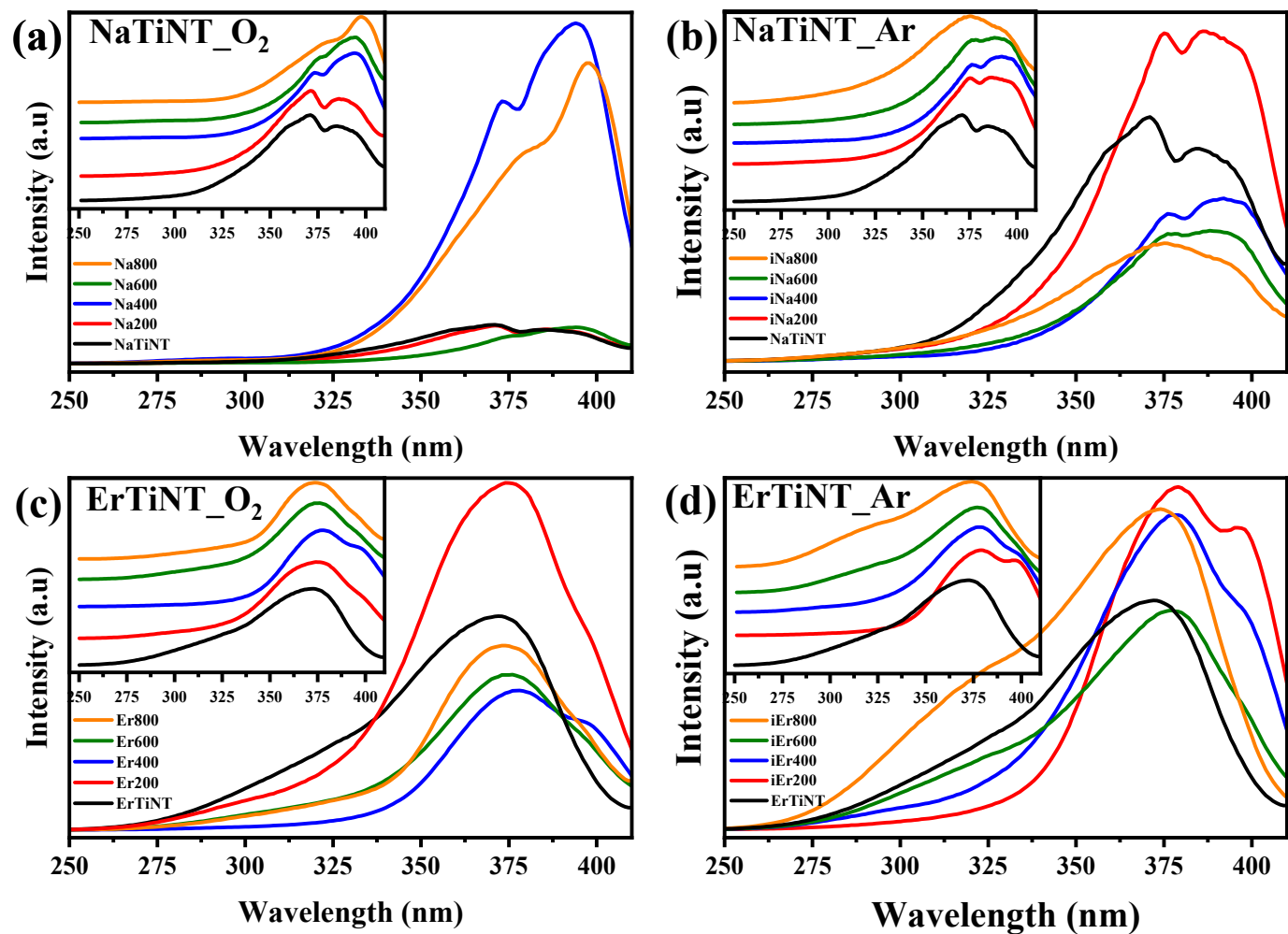


Figure S5: Excitation PL spectrum (emission at 430 nm) of NaTiNTs and ErTiNTs calcined in air and argon atmosphere. The prefix "i" in figures (b) and (d) indicate the samples treated in inert atmosphere (argon). The insets were normalized and translated vertically. Variations in PL intensity occur with increasing temperature for all samples independently of the atmosphere.

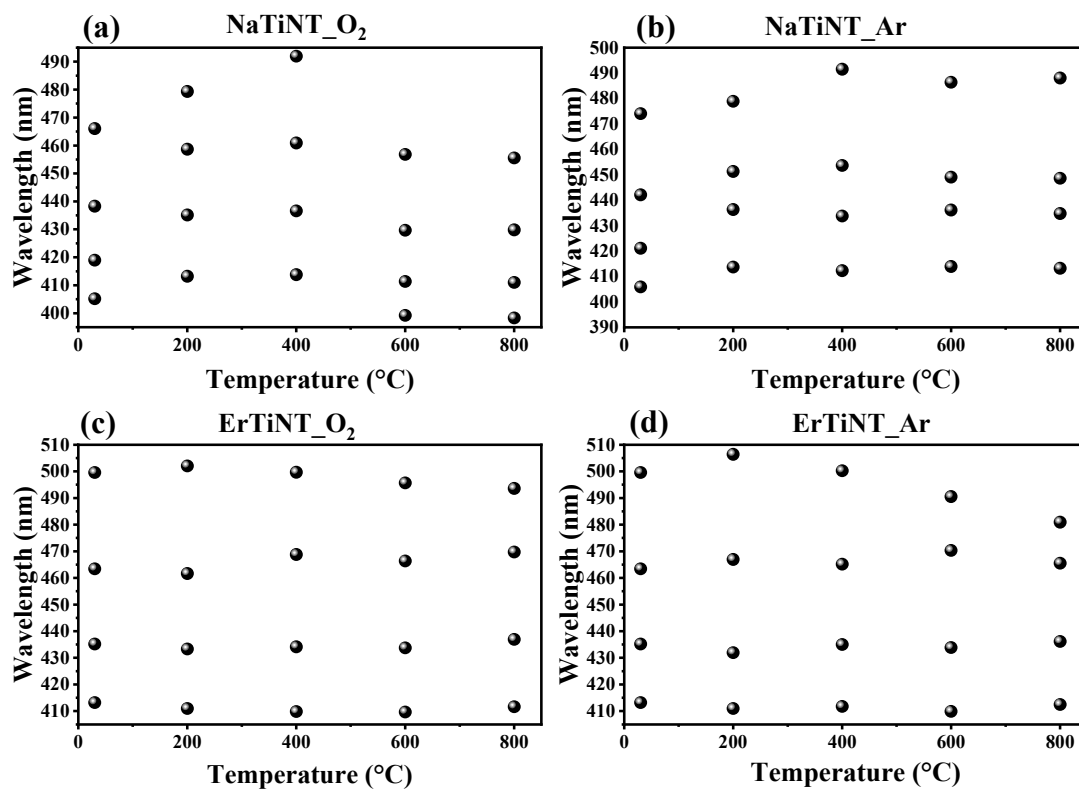


Figure S6: Changes (redshift and blueshift) in the positions of the peaks refers to the TiNT structure with the insertion of Er³⁺ ions and thermal treatment in air and argon atmosphere. The peaks referring to Er³⁺ ions are not presented.