

Supporting Information

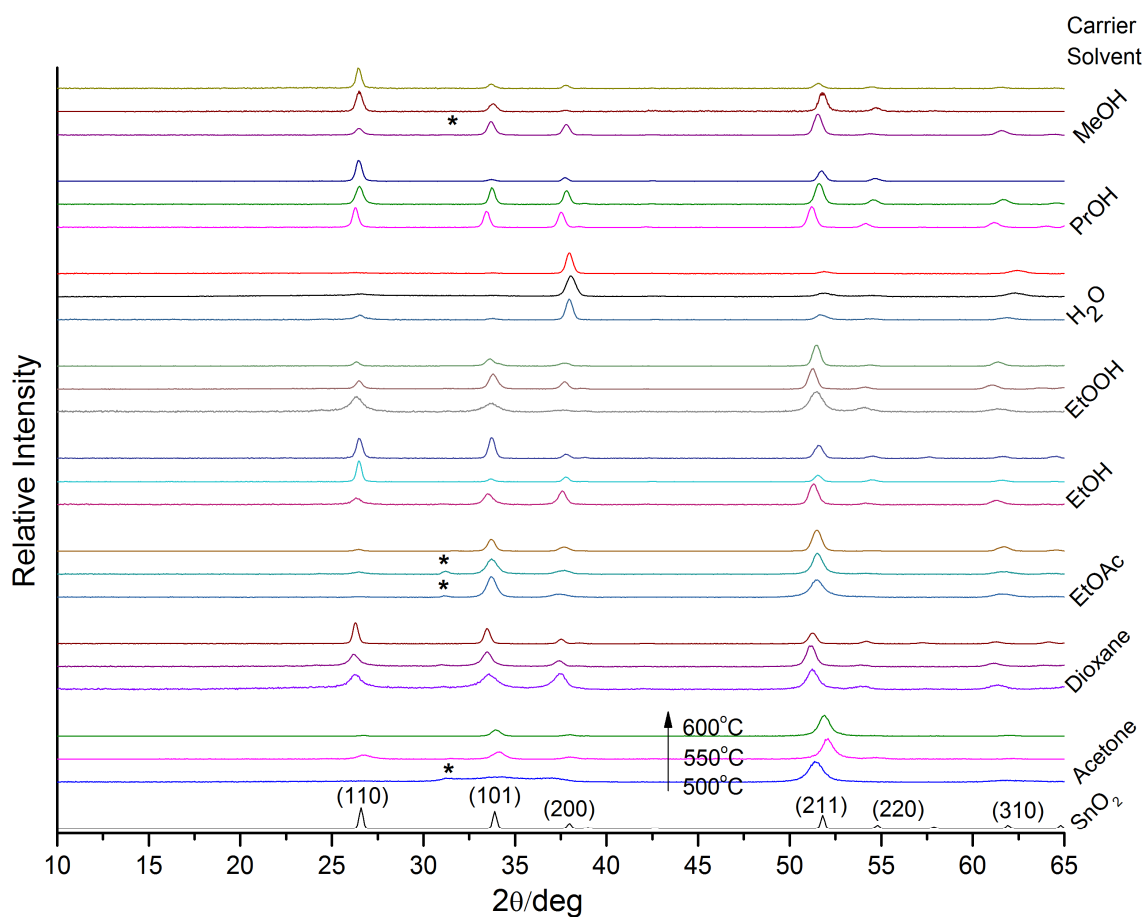


Figure S1: Collated XRD diffractograms of thin films deposited under different solvent (acetone, dioxane, ethyl ethanoate, ethanol, ethanoic acid, water, propanol and methanol) and temperature (500, 550 and 600°C) conditions from the AACVD of ⁿBuSnCl₃ and NH₄F in air. The labelled reference displays SnO₂ peaks, the aberrant SnO(101) peak is starred (*).

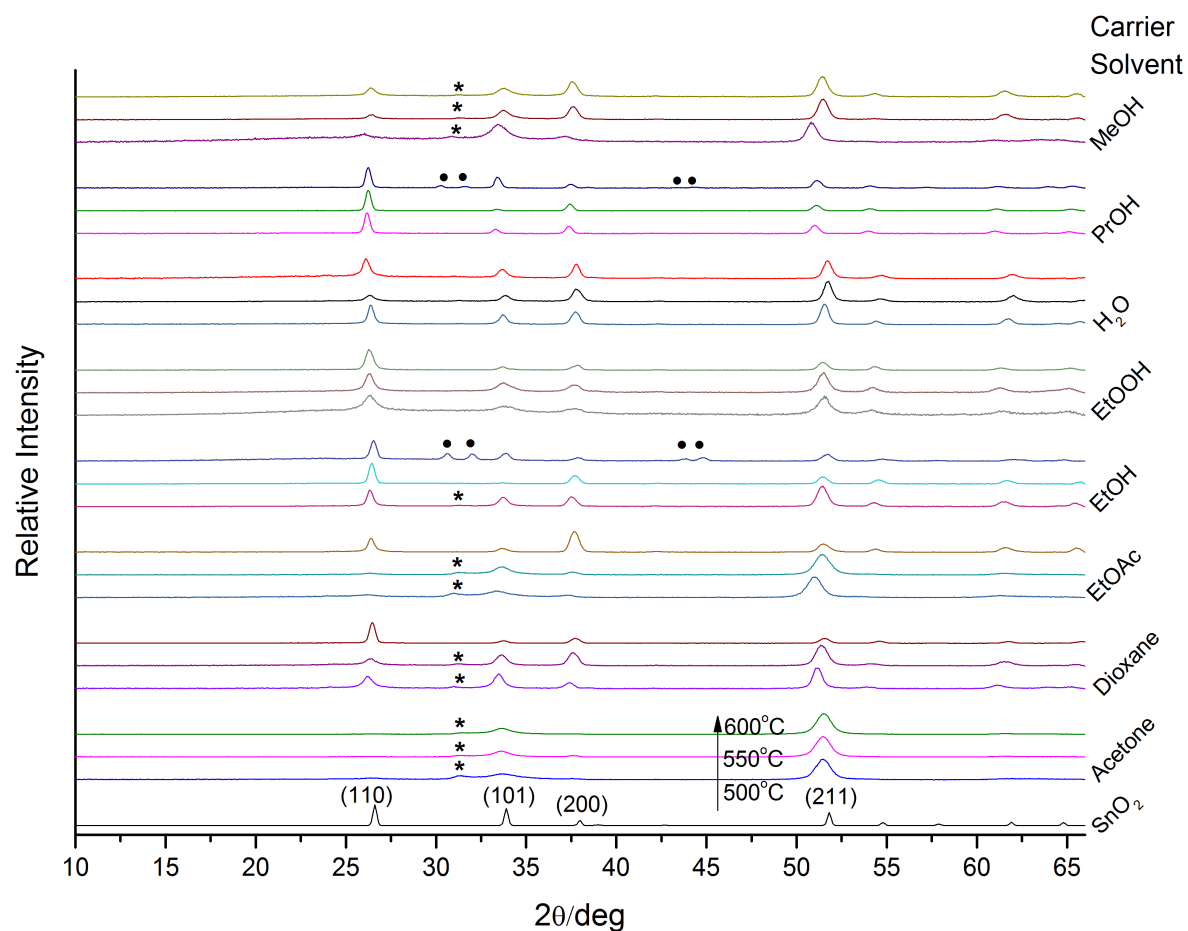


Figure S2: Collated XRD diffractograms of thin films deposited under different solvent (acetone, dioxane, ethyl ethanoate, ethanol, ethanoic acid, water, propanol and methanol) and temperature (500, 550 and 600°C) conditions from the AACVD of $^n\text{BuSnCl}_3$ and NH_4F in nitrogen. The labelled reference displays SnO_2 peaks, the aberrant $\text{SnO}(101)$ peak is starred (*) and β -Sn peaks marked with black circles.

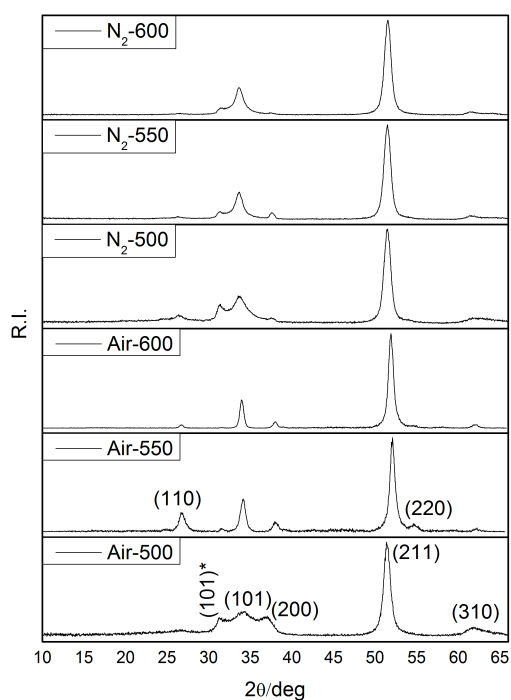


Figure S3: Collated XRD diffractograms of thin films deposited from acetone under different temperature and carrier gas conditions. The labelled reference displays SnO₂ peaks and the aberrant SnO(101) peak is starred (*).

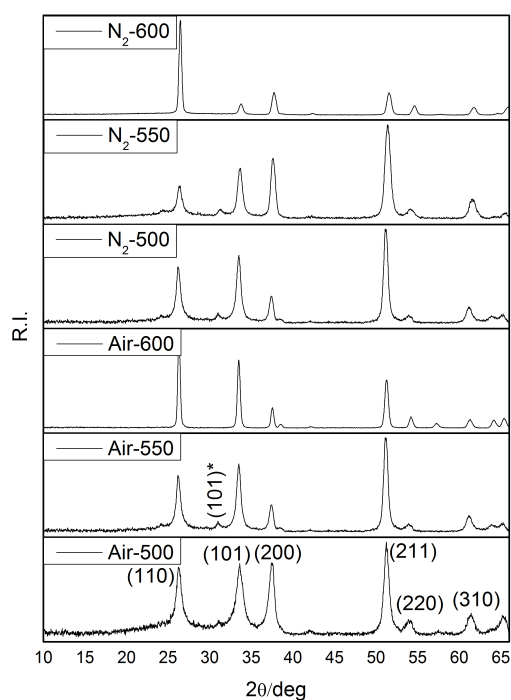


Figure S4: Collated XRD diffractograms of thin films deposited from dioxane under different temperature and carrier gas conditions. The labelled reference displays SnO₂ peaks and the aberrant SnO(101) peak is starred (*).

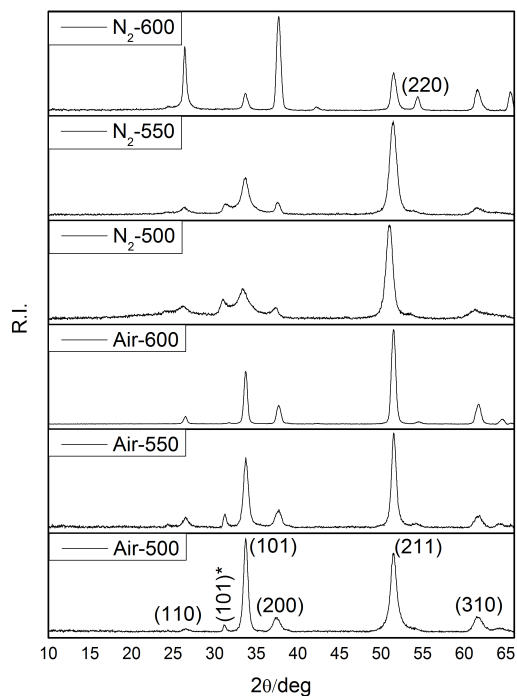


Figure S5: Collated XRD diffractograms of thin films deposited from ethyl ethanoate under different temperature and carrier gas conditions. The labelled reference displays SnO₂ peaks and the aberrant SnO(101) peak is starred (*).

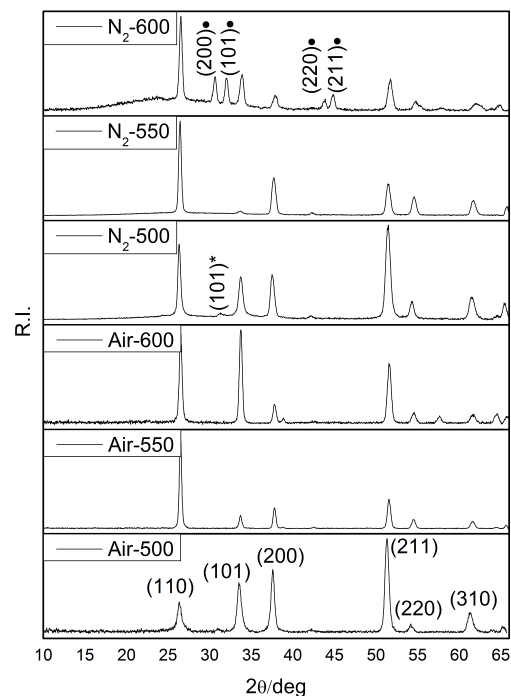


Figure S6: Collated XRD diffractograms of thin films deposited from ethanol under different temperature and carrier gas conditions. The labelled reference displays SnO₂ peaks, the aberrant SnO(101) peak is starred (*) and β-Sn peaks marked with black circles.

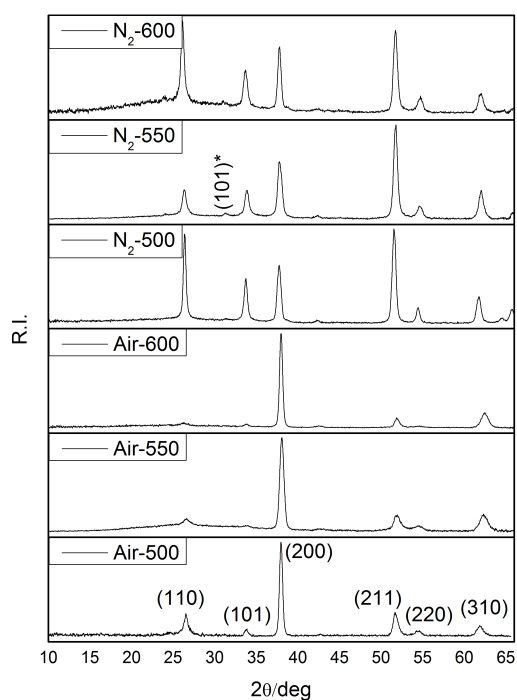


Figure S7: Collated XRD diffractograms of thin films deposited from H₂O under different temperature and carrier gas conditions. The labelled reference displays SnO₂ peaks and the aberrant SnO(101) peak is starred (*).

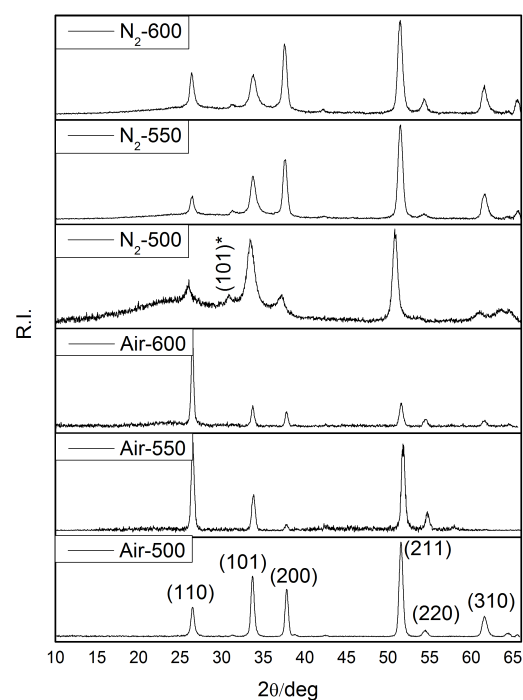


Figure S8: Collated XRD diffractograms of thin films deposited from methanol under different temperature and carrier gas conditions. The labelled reference displays SnO₂ peaks and the aberrant SnO(101) peak is starred (*).

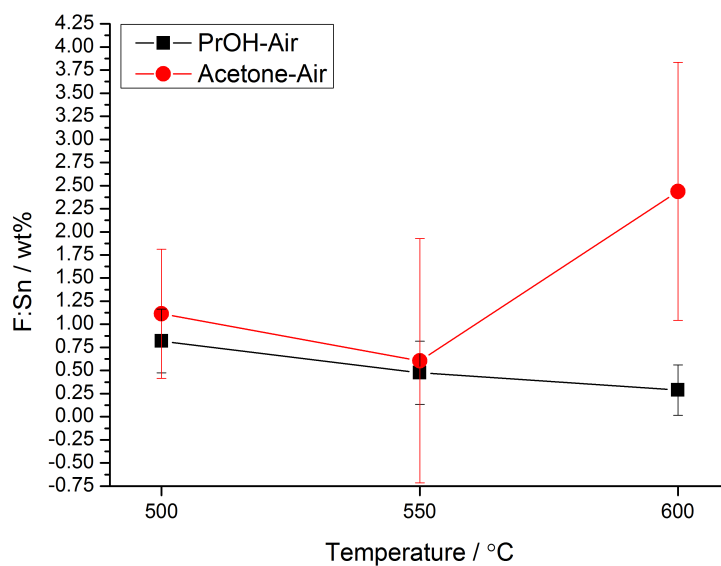


Figure S9: WDX F:Sn Wt% values over the experimental temperature range

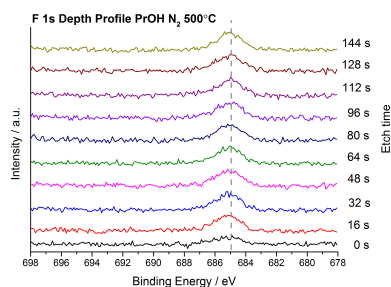


Figure S10: Fluorine 1s orbital XPS depth profile of an FTO film formed from propan-2-ol in N₂ at 500°C

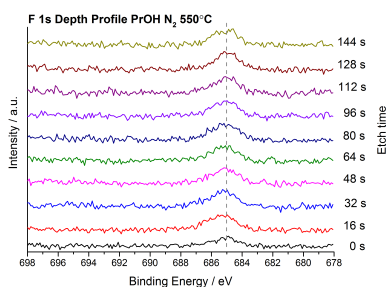


Figure S11: Fluorine 1s orbital XPS depth profile of an FTO film formed from propan-2-ol in N₂ at 550°C

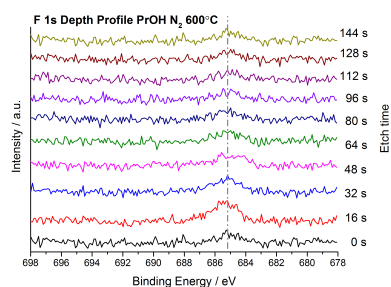


Figure S12: Fluorine 1s orbital XPS depth profile of an FTO film formed from propan-2-ol in N₂ at 600°C

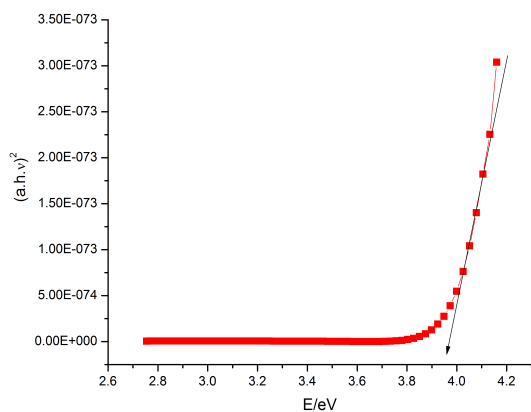


Figure S13: Illustrative extrapolated $(ah\nu)^2$ vs E/eV plot for E_G^{opt} calculation

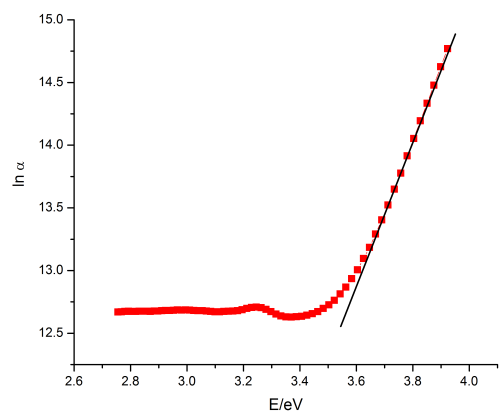


Figure S14: Illustrative sub-bandgap $\ln \alpha$ vs E/eV plot for E_v calculation

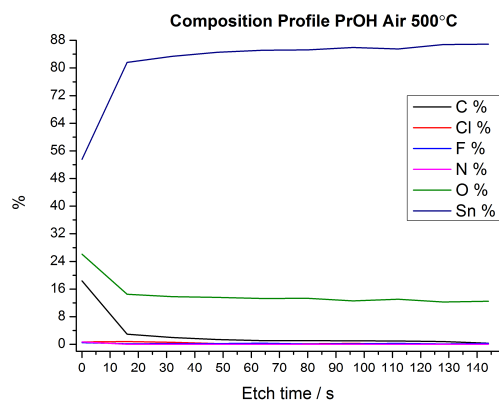


Figure S15: Compositional profile changes in an ion-etched PrOH sample deposited at 500°C in air

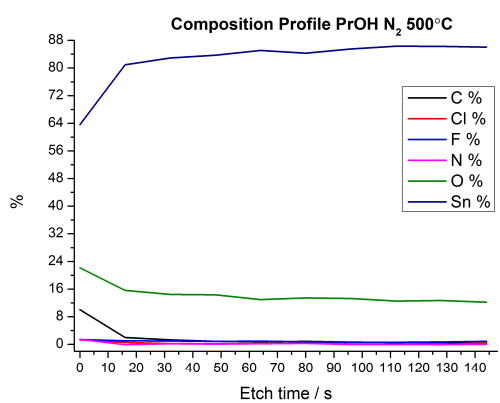


Figure S16: Compositional profile changes in an ion-etched PrOH sample deposited at 500°C in N₂

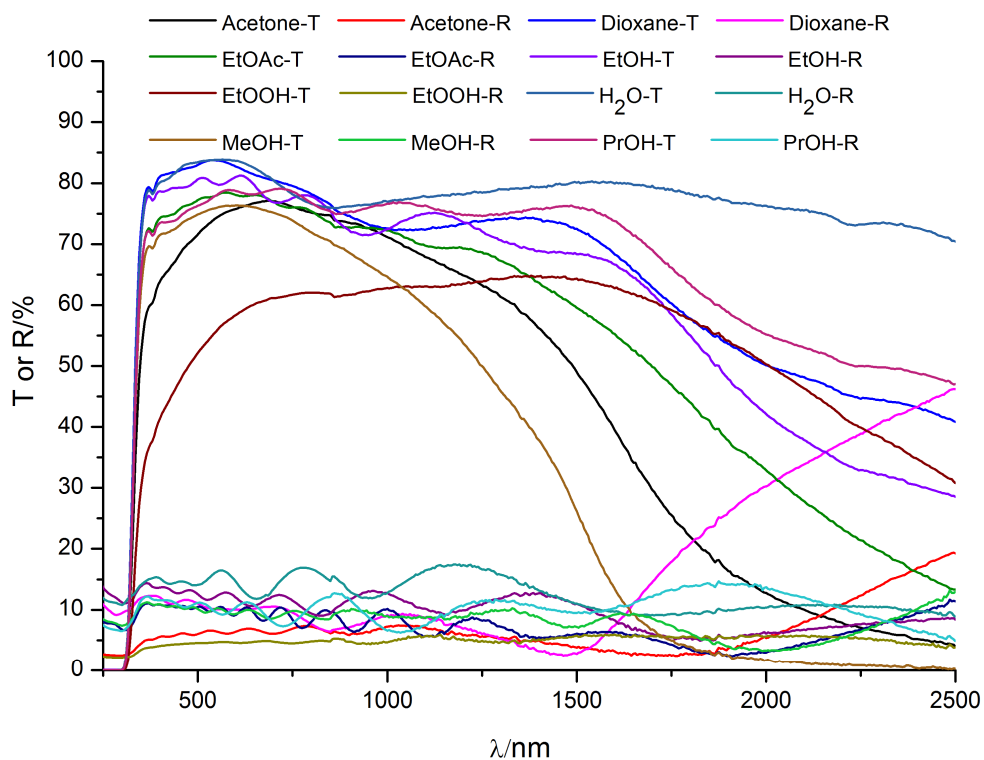


Figure S17: Transmittance-Reflectance profiles of air carrier gas-600°C condition for the various carrier solvents.

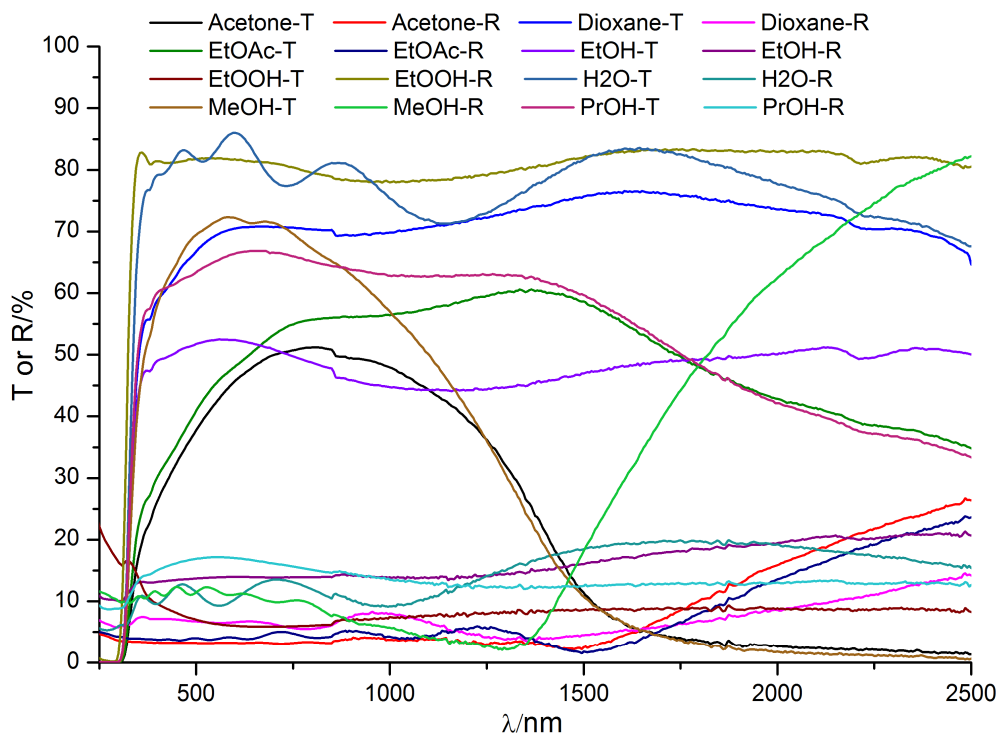


Figure S18: Transmittance-Reflectance profiles of N₂ carrier gas-600°C condition for the various carrier solvents.