

**Electronic Supplementary Information for:**

**Intrinsically Strained Noble Metal-Free Oxynitrides for Solar Photoreduction of CO<sub>2</sub>**

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Table S1: Sample nomenclature

<b>Zn:Ga precursor concentration</b>	<b>LDH nomenclature</b>	<b>Nitriding time (min)</b>	<b>Oxynitride nomenclature</b>
1:1	1-LDH	10	1-10
		20	1-20
		30	1-30
2:1	2-LDH	10	2-10
		20	2-20
		30	2-30
3:1	3-LDH	10	3-10
		20	3-20
		30	3-30

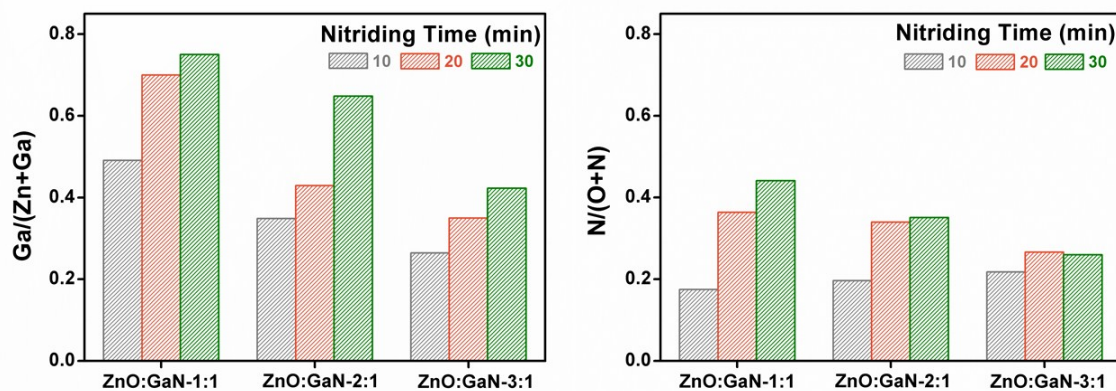


Figure S1: Elemental composition evolution (zinc volatilization and nitrogen incorporation) of the oxynitrides during nitriding time.

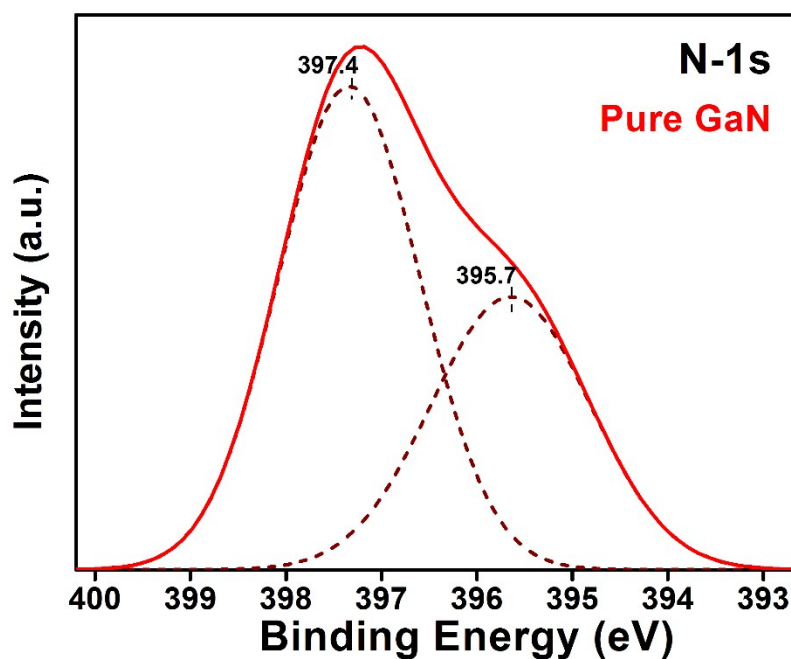


Figure S2:  $\text{N-1s}$  spectrum for pure GaN sample deconvoluted into Ga-N peak (397.4 eV) and an Auger peak (395.7 eV)

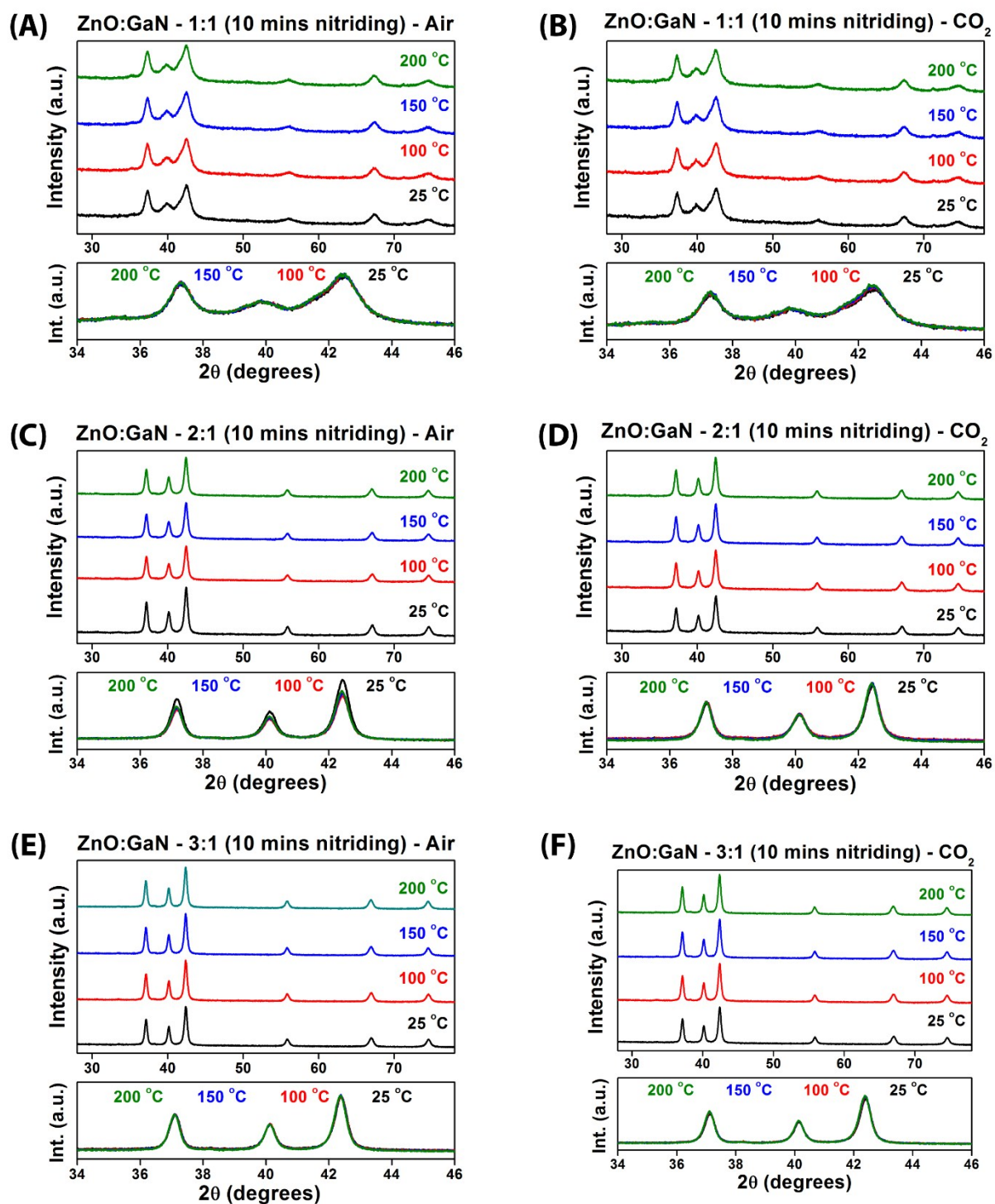


Figure S3 (A-F): Crystalline stability of the samples probed via in-situ XRD under CO<sub>2</sub> and air.

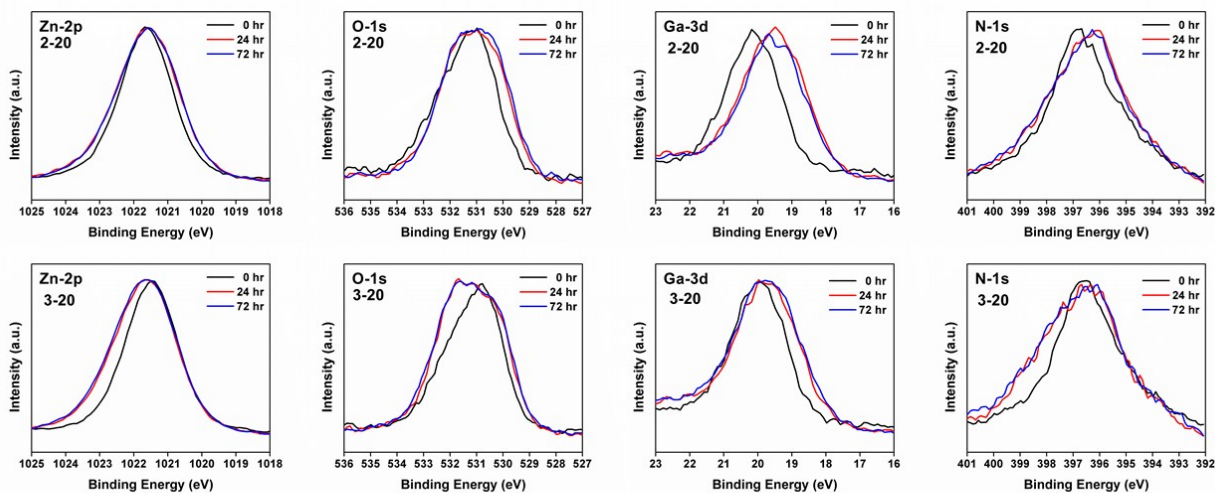


Figure S4: Zn-2*p*, O-1*s*, Ga-3*d* and N-1*s* spectra of oxynitride samples (ZnO:GaN = 2:1 and 3:1; nitrided for 20 min) treated under UV-A (F15T8 bulbs at 75 W/m<sup>2</sup>) light up to 72 hours.