sensors

MDPI

Supplementary Materials

# Defect-Induced Gas-Sensing Properties of a Flexible SnS Sensor under UV Illumination at Room Temperature

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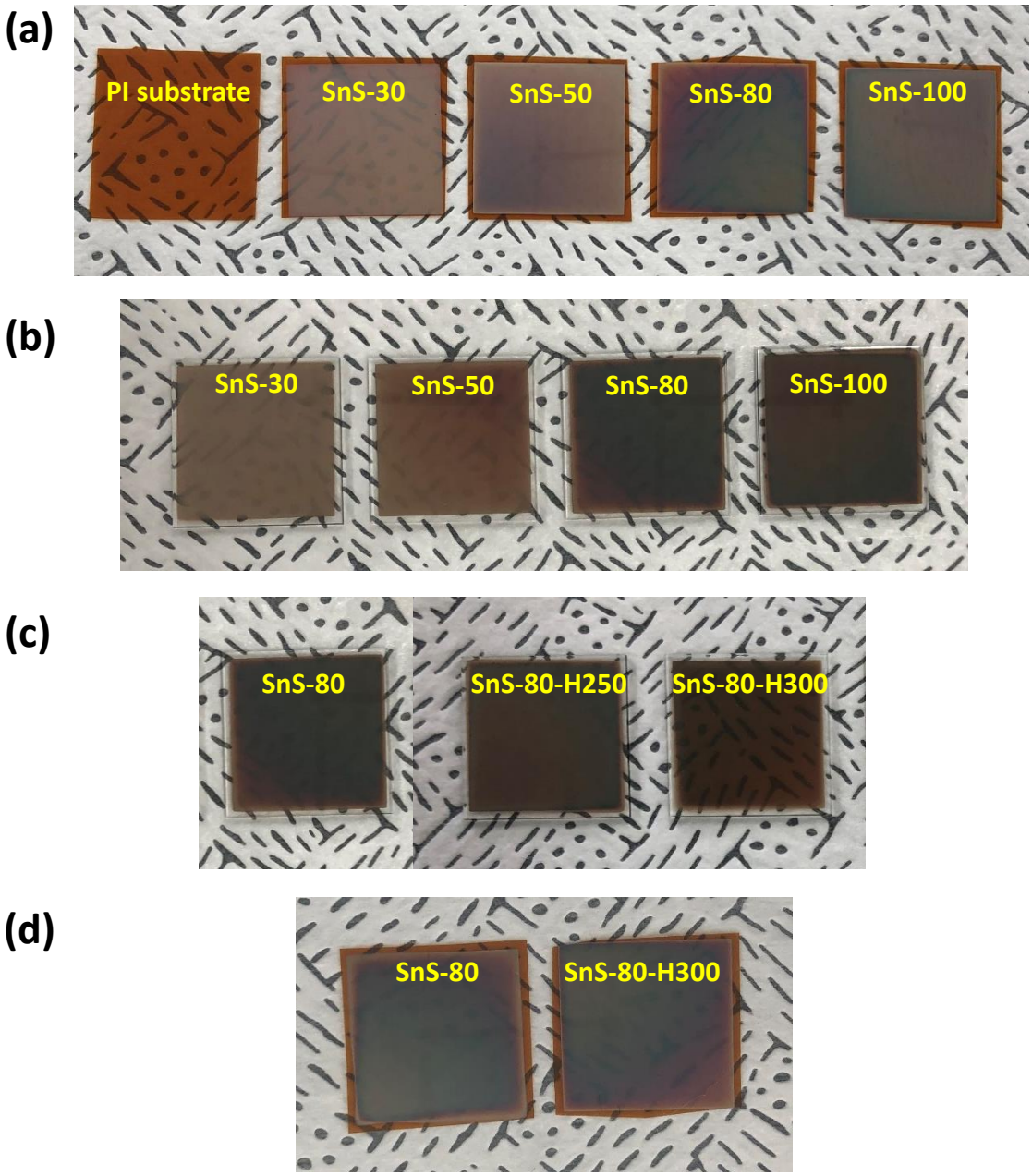


**Figure S1.** As-deposition SnS thin films with various thicknesses sputtered onto (**a**) polyimide substrates and (**b**) glass substrates. (**c**) SnS-80 thin films annealed at different temperatures (250 and 300 °C) compared to as-deposition SnS thin film. (**d**) SnS-80-H300 thin film on PI substrate shows no deformation after annealing at 300 °C in comparison to as-deposition SnS-80 thin film under observation by the naked eye.

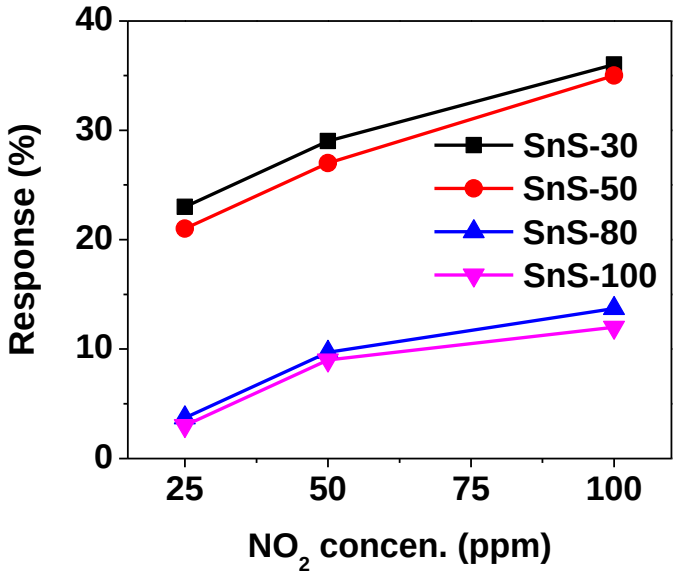


**Figure S2.** Summaries of the response of as-deposition SnS thin film sensors toward NO2 at RT under UV illumination (derived from Figure 7d).

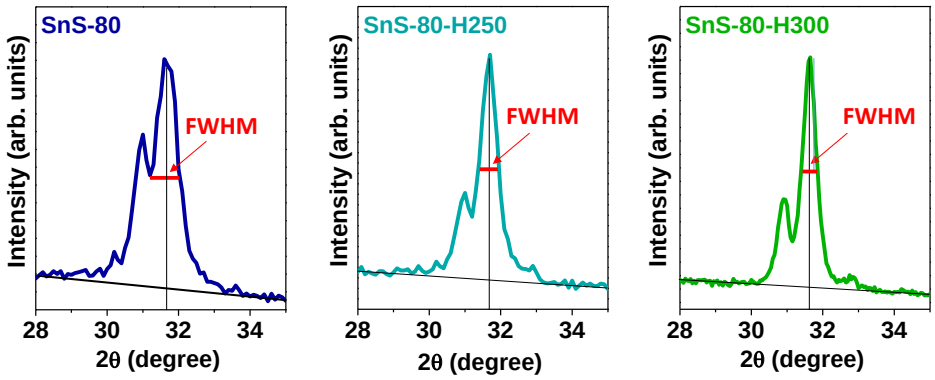


**Figure S3.** Enlarged XRD profiles of (004) diffraction peaks of SnS-80, SnS-80-H250, and SnS-80-H300.

The size of particles can be calculated using the Debye–Sheerer fomular:

$$d = \frac{k.\lambda}{\beta.cos\theta} \qquad (1)$$

Here, k is a constant and gets a value of 0.94.

$\lambda$ is the X-ray wavelength ($\lambda$ = 0.15418 nm for $Cu_{K\alpha}$ radiation).

$\beta$ is the full width at half maximum or FWHM (rad).

$\theta$ is the difraction degree (degree).

The results calculated from Equation (1) are summaried in the following Table S1:

**Table S1.** The particle sizes of various SnS thin-films annealed at different temperatures.

| Samples | FWHM [degree] | FWHM [rad] | d (nm) |
|---|---|---|---|
| SnS-80 | 0.840 | 0.0147 | 10.2 |
| SnS-80-H250 | 0.495 | 0.0086 | 17.5 |
| SnS-80-H300 | 0.48 | 0,0083 | 18.2 |