

## Supporting Information of:

### Controlled Growth of 3D Assemblies of Edge Enriched Multilayer MoS<sub>2</sub> Nanosheets for Dually Selective NH<sub>3</sub> and NO<sub>2</sub> Gas Sensors

Fatima Ezahra Annanouch<sup>1\*</sup>, Aanchal Alagh<sup>1</sup>, Polona Umek<sup>2</sup>, Juan Casanova-Chafer<sup>1</sup>,  
Carla Bittencourt<sup>3</sup> and Eduard Llobet<sup>1</sup>

<sup>1</sup> Departament d'Enginyeria Electronica, Universitat Rovira i Virgili, avenida Països Catalans 26, 43007 Tarragona, Spain.

<sup>2</sup> Department of Solid-State Physics, Jozef Stefan Institute, Jamova cesta 39, 1000 Ljubljana, Slovenia.

<sup>3</sup> Laboratory of Plasma-Surface Interaction Chemistry (PSI Chem), University of Mons, Av. Nicolas Copernic 1, 7000 Mons, Belgium.

#### Corresponding author

\*Fatima Ezahra Annanouch: [fatimaezahra.annanouch@urv.cat](mailto:fatimaezahra.annanouch@urv.cat)

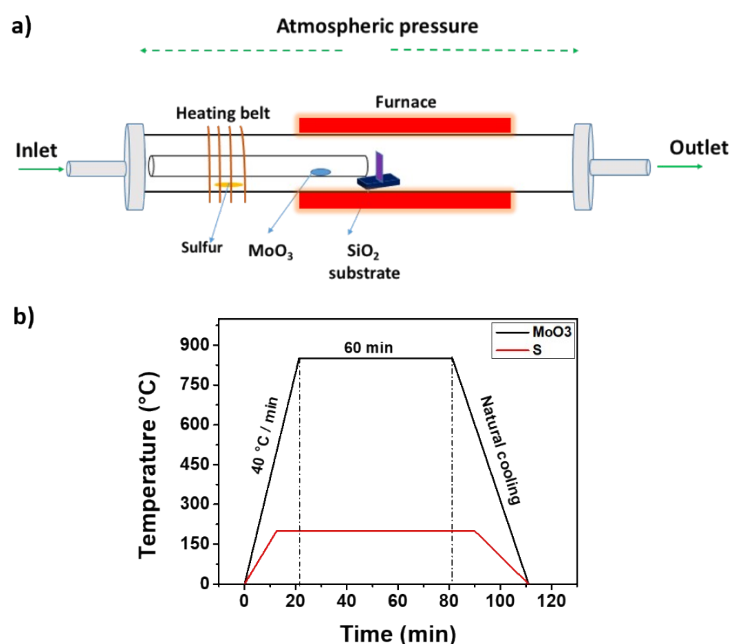


Fig.S1. (a) APCVD synthesis setup and (b) MoS<sub>2</sub> growth temperature profile.

Edge enriched 3D assembly of MoS<sub>2</sub> nanosheets based sensor was fabricated in our lab by connecting two platinum wires to the substrate using silver paste as depicted in Fig.S2. besides to this, a Platinum resistive heater was pasted on its backside in order to provide the temperature when needed. Finally, the hole sensor was wire-banded to a PCB.

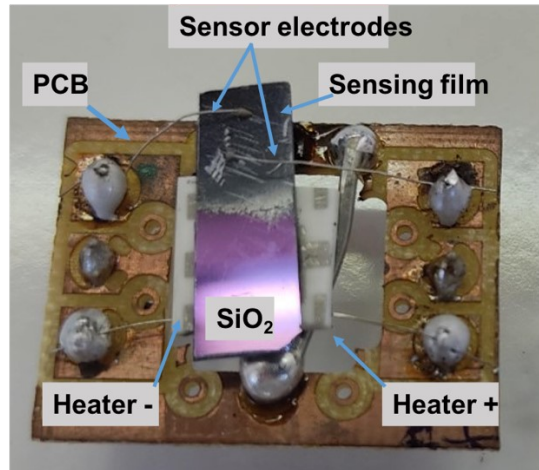


Fig.S2. Sensor photograph.

FESEM images of sample obtained at 10 ml /min of argon gas. As we can see, we have a dispersed nanotriangles over the substrate.

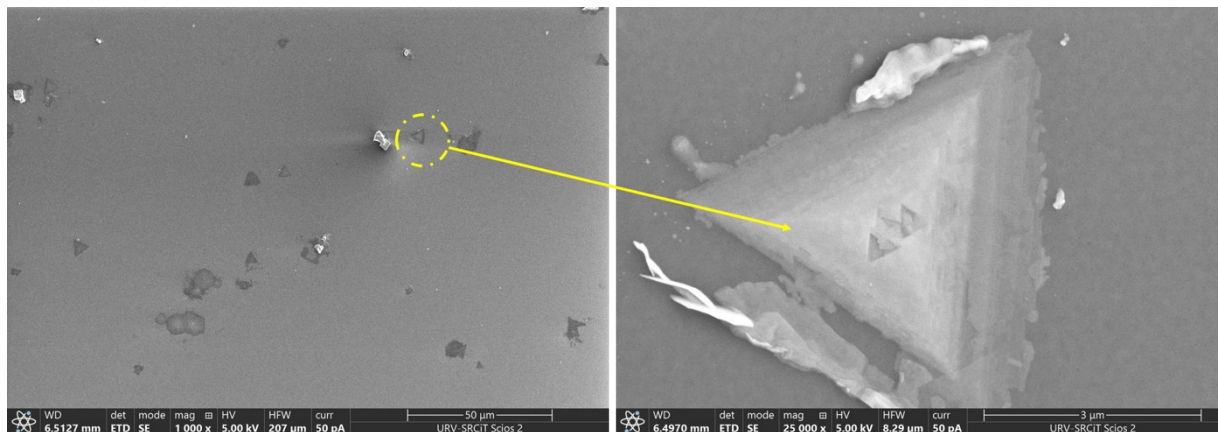


Fig.S3. FESEM images of MoS<sub>2</sub>-10 sample.

FESEM images of sample obtained at 30 ml /min of argon gas. As we can see, we have thick layer of edge enriched 3D assemblies MoS<sub>2</sub> nanosheets over the substrate.

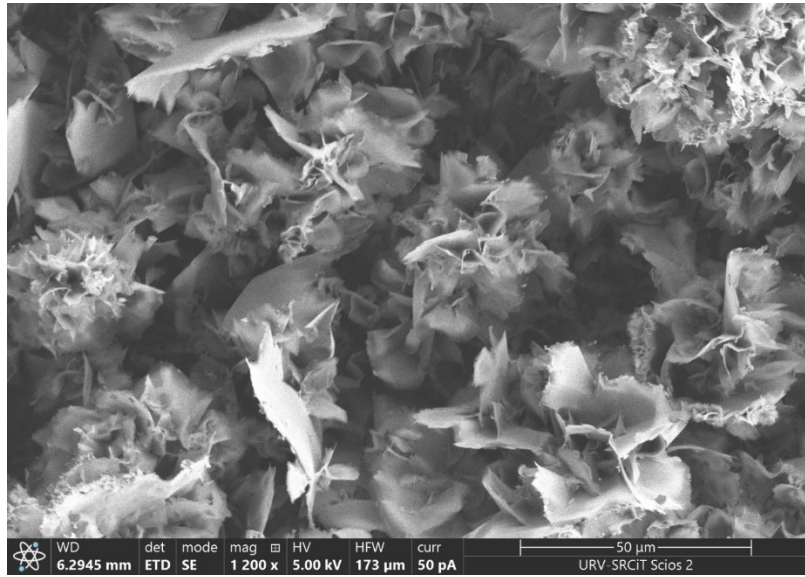


Fig.S4. FESEM images of MoS<sub>2</sub>-30 sample.

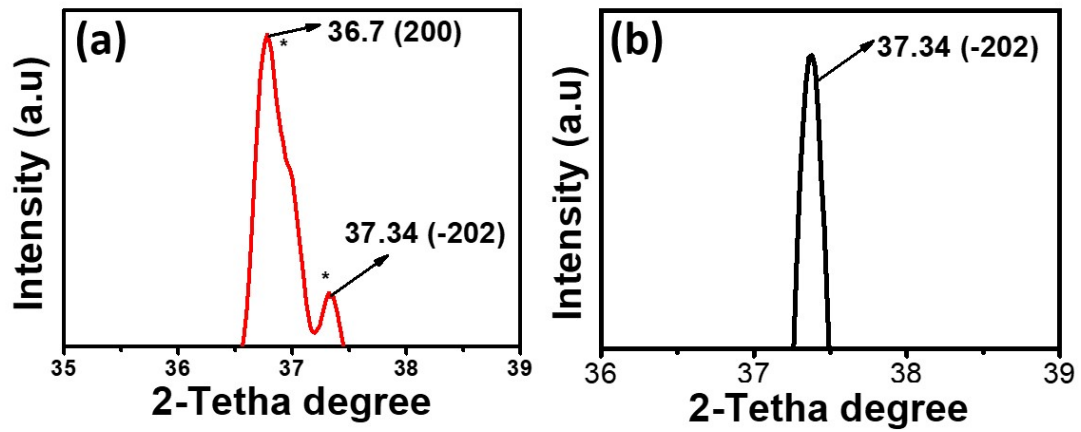


Fig.S5. Enlarged XRD peaks recorded between 36 ° and 38° from MoS<sub>2</sub>-30 and MoS<sub>2</sub>-70 films.

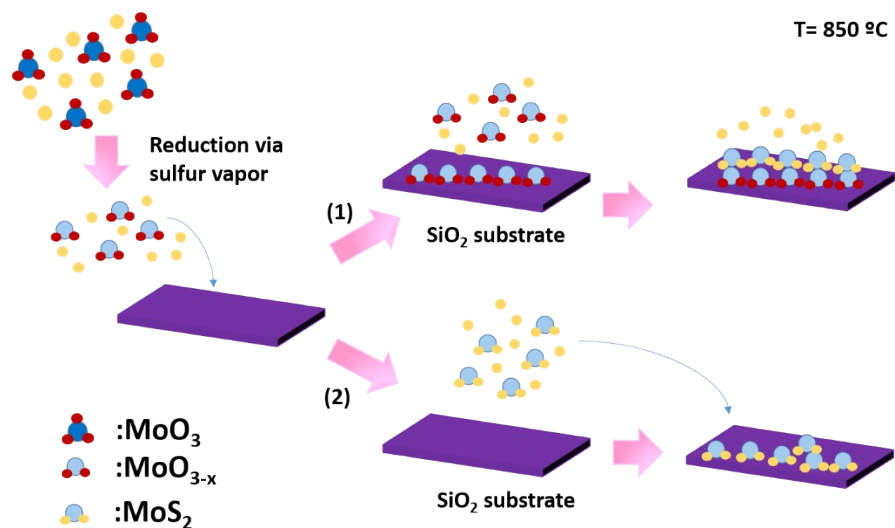


Fig.S6. growth mechanism of edge enriched 3D assembly of MoS<sub>2</sub> nanosheets.

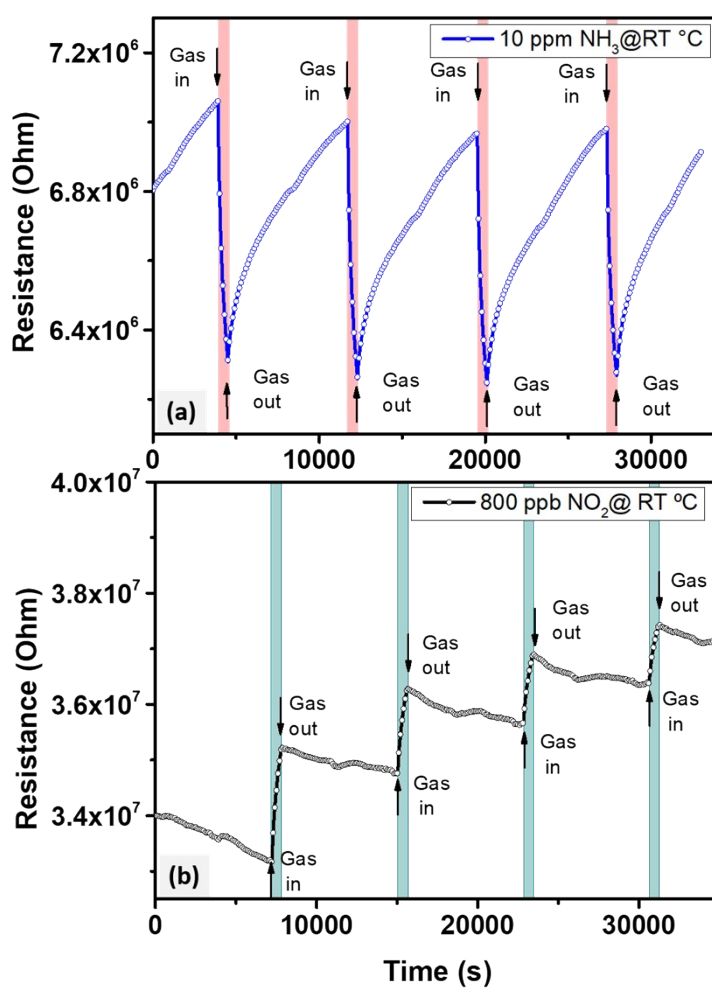


Fig.S7. sensor resistance changes as a function of time against (a) 10 ppm of NH<sub>3</sub> and (b) 800 ppb of NO<sub>2</sub>, at room temperature.