SUPPORTING INFORMATION

Layered α-MoO₃ nanoplates for gas sensing application

A.A. Felix,* R.A. Silva, M.O. Orlandi*

Department of Engineering, Physics and Mathematics, Chemistry Institute, São Paulo State University (UNESP), Araraquara, São Paulo, Brazil.

* Corresponding authors: aafelixy@yahoo.com.br and marcelo.orlandi@unesp.br



Figure S1: (a) Length, (b) width, (c) area and (d) length/width ratio distributions of the layered α -MoO₃ nanoplates. These parameters were estimated based on the nanoplates in which length and width could be clear measured, to avoid any contribution from the overlapped nanoplates. These results were carried out on the sample prepared at 400 °C for 1 hour with 1-layer deposition on silicon substrate, i.e., the optimum synthesis condition. It was used five SEM images, with the same magnification of Figure 4c, in which were measured length and width of 150 nanoplates using ImageJ software.



Figure S2: Raman spectra of the layered α -MoO₃ nanoplates annealed at 400 °C (a) with 1-layer deposition on silicon substrates for different annealing times, (b) on silicon substrates for 1 hour with different layer depositions and (c) with 1-layer deposition for 1h on different substrates.



Figure S3: SEM images of the as-grown MoO_3 samples prepared with 1-layer deposition on silicon substrates at (a) 300 °C and (b) 350°C for 1 hour.



Figure S4: SEM images of *ex-situ* morphological evolution of the α -MoO₃ nanostructures prepared with 1-layer deposition on silicon substrates. (a,b) Layered α -MoO₃ nanoplates were analyzed as-grown at 400°C, and then (c,d) a first annealing process was performed at 450 °C on the same sample, and, afterward, (d) the same sample was annealed again at 500°C. The SEM images were recorded on the same region of the sample.



Figure S5: SEM images of the layered α -MoO₃ nanoplates prepared with 1-layer deposition at 400 °C for 1h on (a) SiO₂/Si, (b) Al₂O₃, and (c) FTO/Glass substrates.



Figure S6: Sensor reproducibility for NO₂ detection at the optimum operating temperature of 250 °C as a function of the gas concentration for the layered α -MoO₃ nanoplates.