*Supporting Information*

# Enhanced $NO_2$-Sensing Properties of Au-Loaded Porous $In_2O_3$ Gas Sensors at Low Operating Temperatures

**Taro Ueda [1,*], Inci Boehme [2], Takeo Hyodo [1] and Yasuhiro Shimizu [1], Udo Weimar [2] and Nicolae Barsan [2]**

[1] Graduate School of Engineering, Nagasaki University, 1-14 Bunkyo-machi, Nagasaki 852-8521, Japan
[2] Institute of Physical and Theoretical Chemistry, Eberhard Karls University of Tuebingen, D-72076 Tübingen, Germany
*Correspondence: taroueda@nagasaki-u.ac.jp (T. U.)

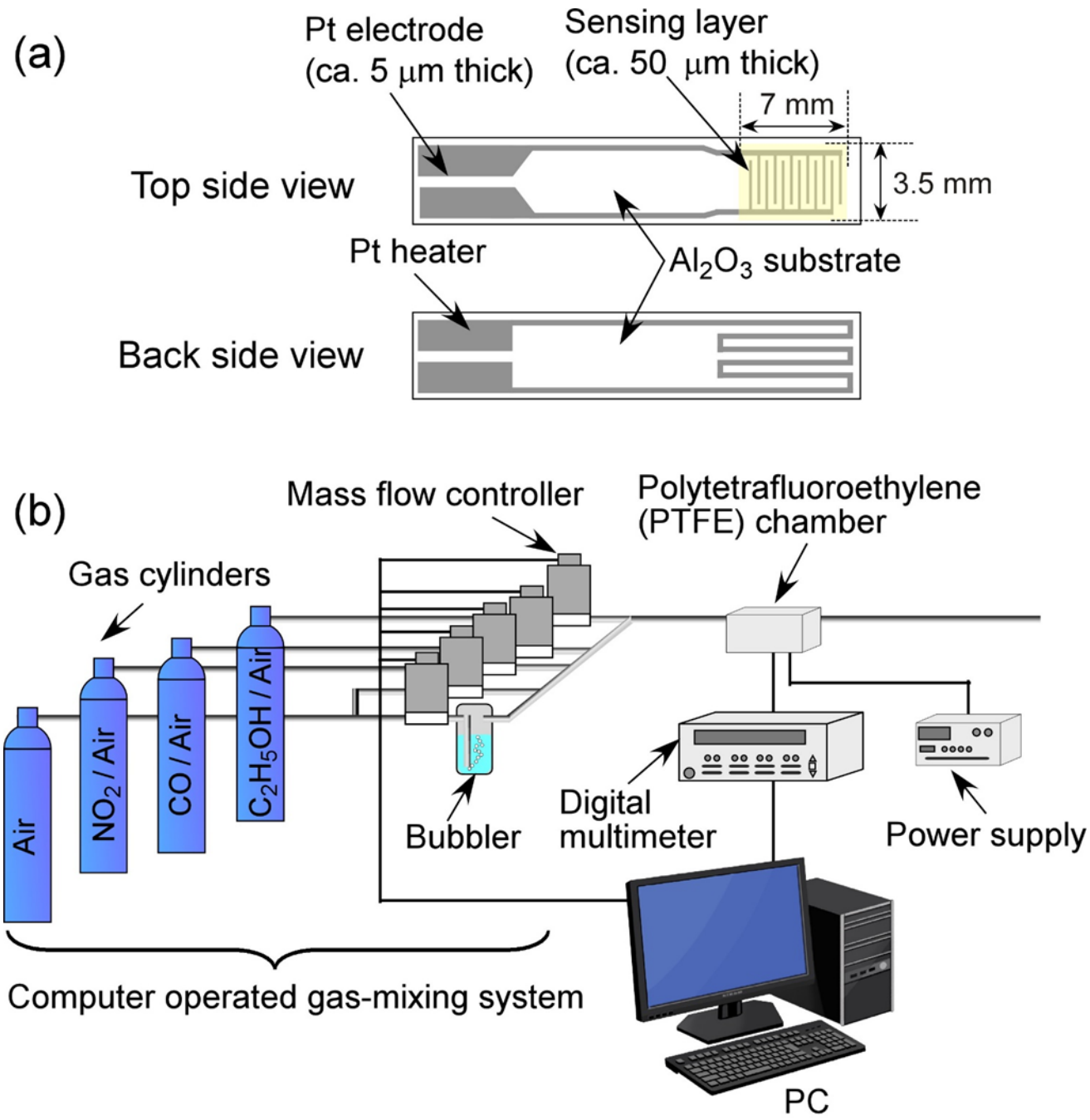


**Figure S1.** Schematic drawing of (a) sensor element and (b) gas-sensing measurement system.

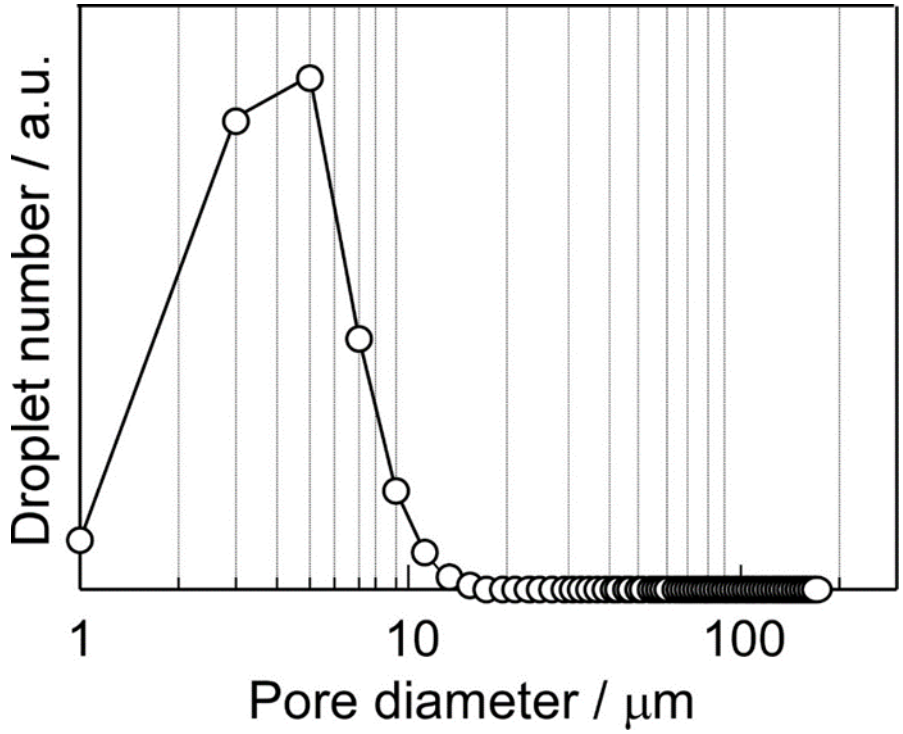


**Figure S2.** Particle-size distribution of precursor mists containing $In_2(NO_3)_3$ and PMMA microspheres, which were prepared by the ultrasonic vibrator.

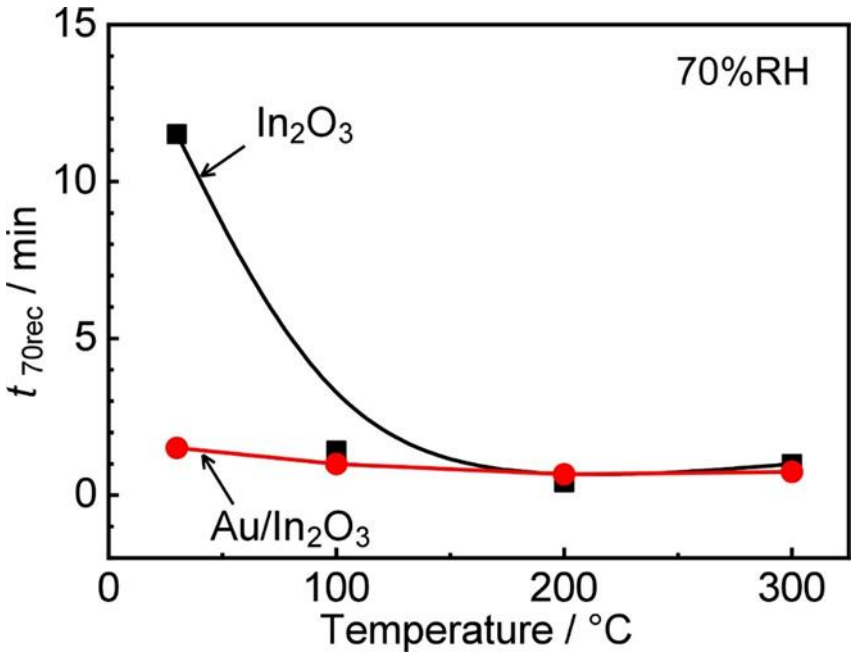


**Figure S3.** Variations in 70% recovery time ($t_{70rec}$) of the $In_2O_3$ and $Au/In_2O_3$ sensors in wet air (70%RH at 25°C) with operating temperature.

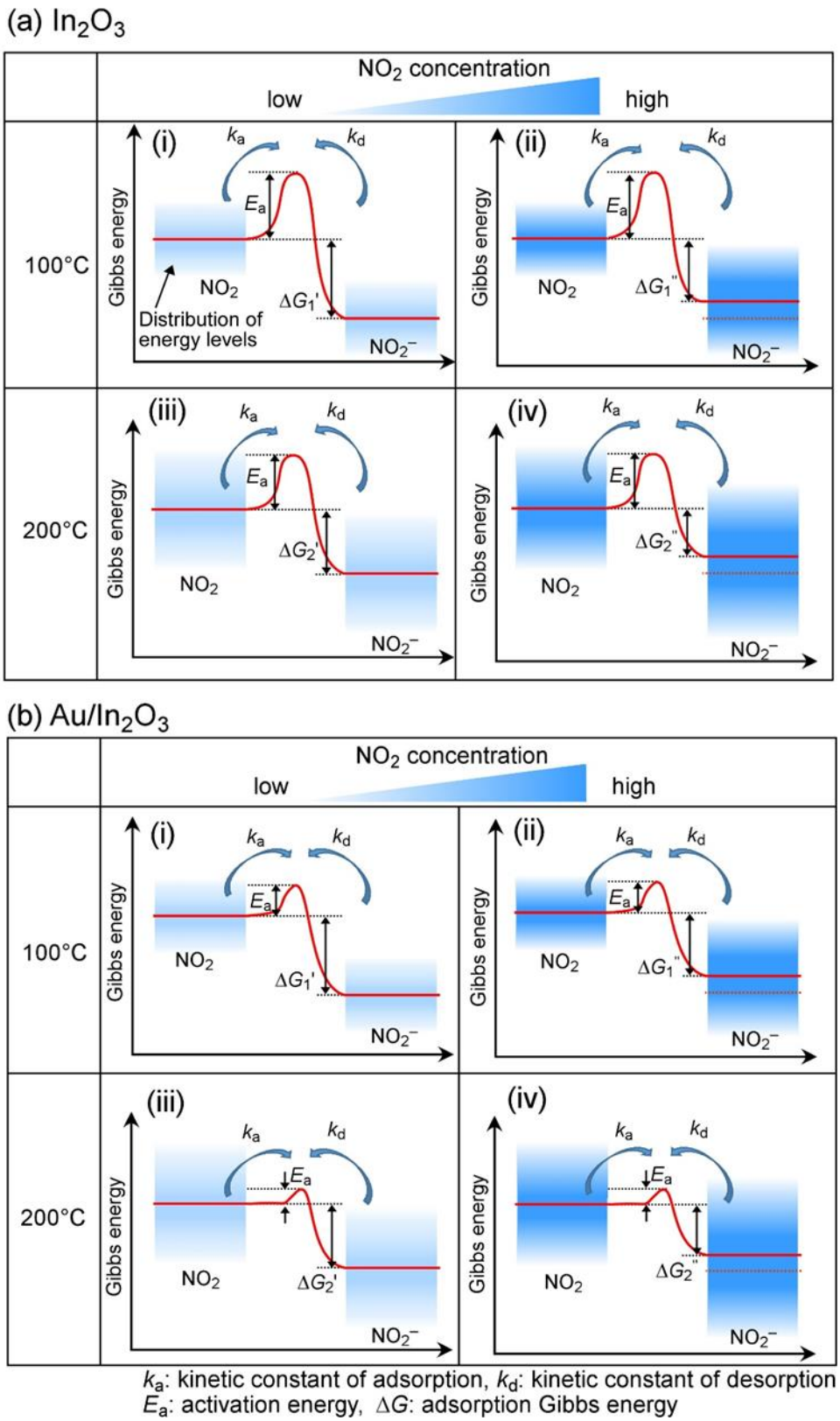


**Figure S4.** Schematic illustrations of the Gibbs energy diagram for the chemical adsorption of $NO_2$ over (a) $In_2O_3$ surface and (b) $Au/In_2O_3$ surface.

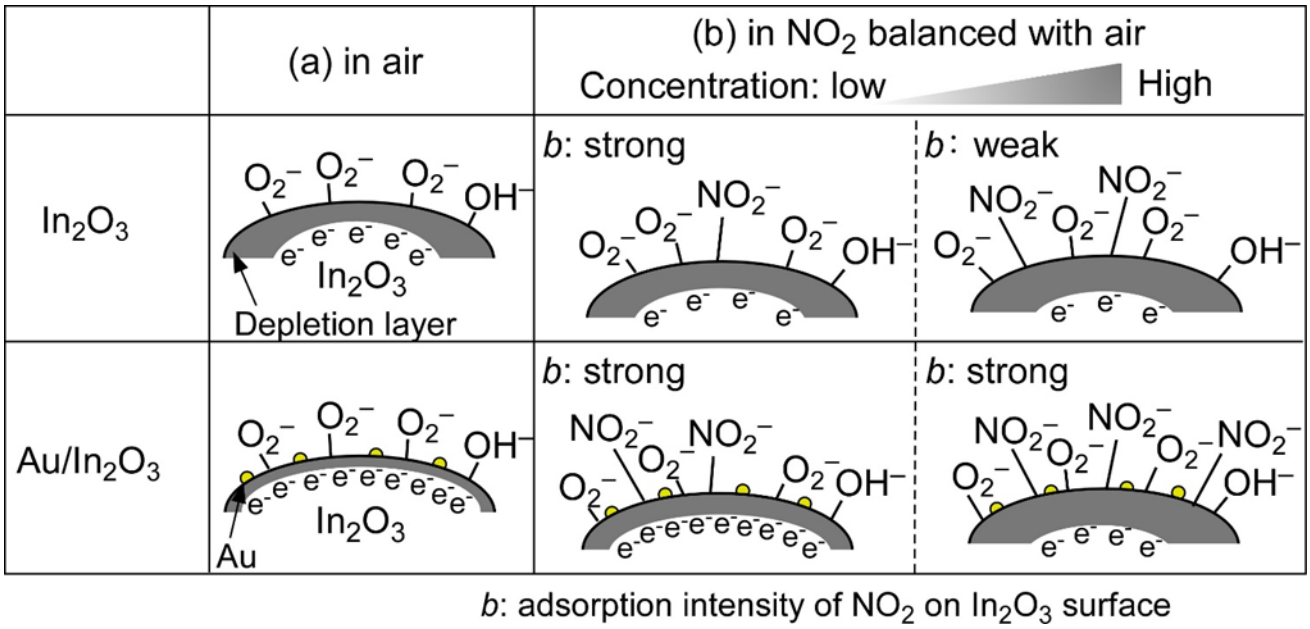


**Figure S5.** Schematic views of gas-adsorption properties of $In_2O_3$ and $Au/In_2O_3$ surfaces in wet air and $NO_2$ balanced with wet air at 100°C.