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Detection of NO₂ down to ppb levels using individual and multiple In₂O₃ nanowire devices DAIHUA ZHANG, ZUQIN LIU, CHAO LI, CHONGWU ZHOU, University of Southern California — We demonstrate detection of NO₂ down to ppb levels using transistors based on both single and multiple In₂O₃ nanowires operating at room temperature. This represents orders-of-magnitude improvement over previously reported metal oxide film or nanowire/nanobelt sensors. A comparison between the single and multiple nanowire sensors reveals that the latter have numerous advantages in terms of great reliability, high sensitivity and simplicity in fabrication. Furthermore, selective detection of NO₂ can be readily achieved with multiple-nanowire sensors even with other common chemicals such as NH₃, O₂, CO and H₂ around.

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