Supporting information

1. Synthesis and characterization of $\beta$-$\text{Ga}_2\text{O}_3$/amorphous-$\text{SnO}_2$ core/shell microribbons.

![Schematic diagram of experimental apparatus for growth of $\beta$-$\text{Ga}_2\text{O}_3$/amorphous-$\text{SnO}_2$ core/shell microribbons.](image1)

**Figure S1.** Schematic diagram of experimental apparatus for growth of $\beta$-$\text{Ga}_2\text{O}_3$/amorphous-$\text{SnO}_2$ core/shell microribbons.


![Schematic diagram of a system to measure the gas-sensing and thermal-switchable properties of $\beta$-$\text{Ga}_2\text{O}_3$/amorphous-$\text{SnO}_2$ core/shell microribbon.](image2)

**Figure S2.** Schematic diagram of a system to measure the gas-sensing and thermal-switchable properties of $\beta$-$\text{Ga}_2\text{O}_3$/amorphous-$\text{SnO}_2$ core/shell microribbon.

3. Electrical response of core/shell microribbon device.
Figure S3. Electrical response of core/shell microribbon-based humidity sensor during cyclic exposure to increasing RH between 15 and 75% in dry air at different operation temperatures of A) 12, B) 20, C) 30 and D) 38 °C. Current was measured at a fixed voltage of 1 V.