## Supporting figures

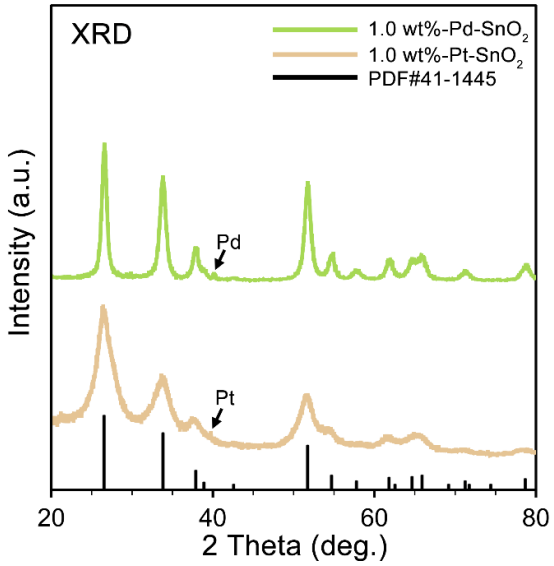



**Figure S1**. The XRD patterns of Pd-$SnO_2$ and Pt-$SnO_2$.

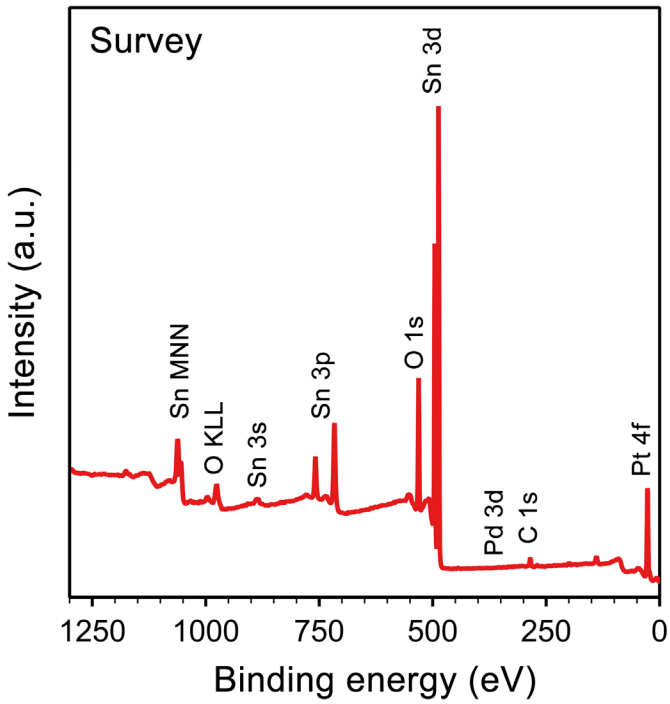



**Figure S2**. XPS survey spectrum of 1.0 wt%-PdPt-$SnO_2$.

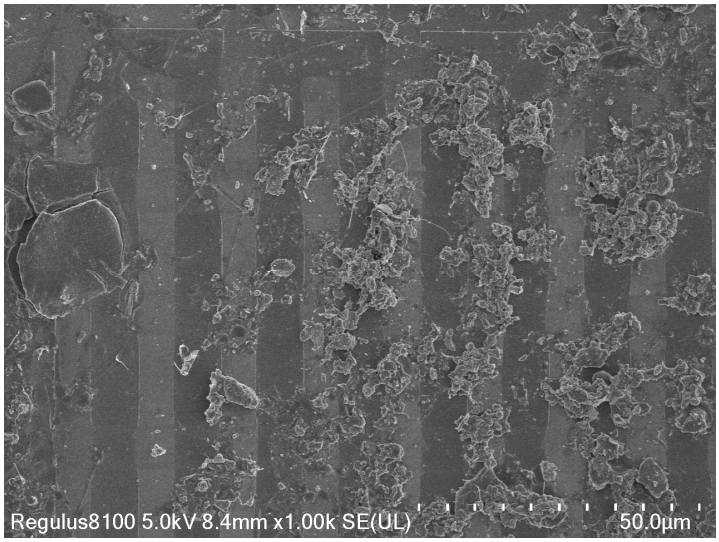



**Figure S3**. SEM image of MEMS sensor with $SnO_2$ coating on the surface.

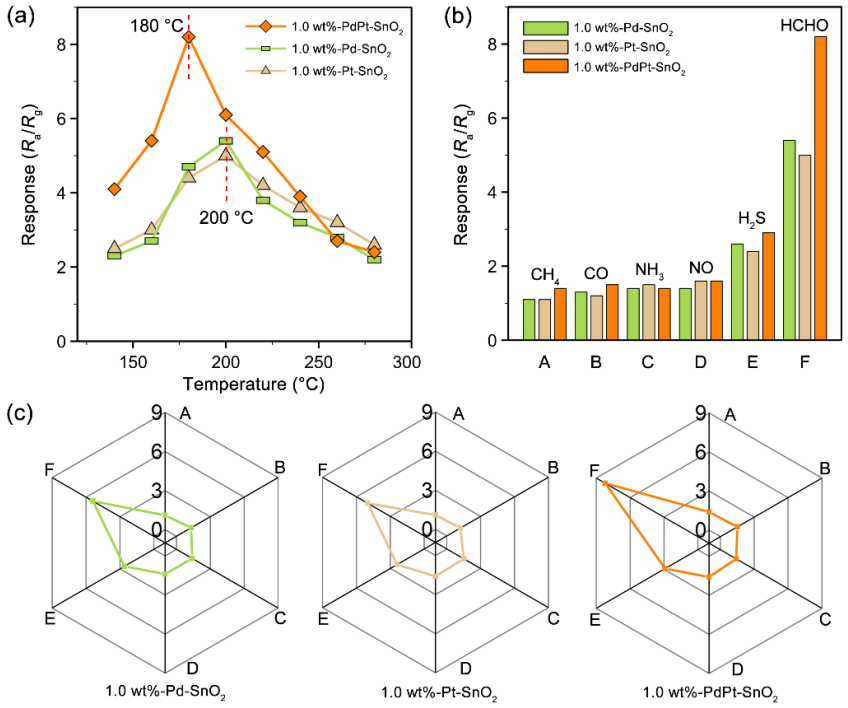



**Figure S4**. (a) Responses at various working temperatures; (b) selectivity tests to 10 ppm of different gases; and (c) transformed radar charts for the sensors based on Pd-$SnO_2$, Pt-$SnO_2$, and PdPt-$SnO_2$ nanoparticles in response to 10 ppm HCHO.

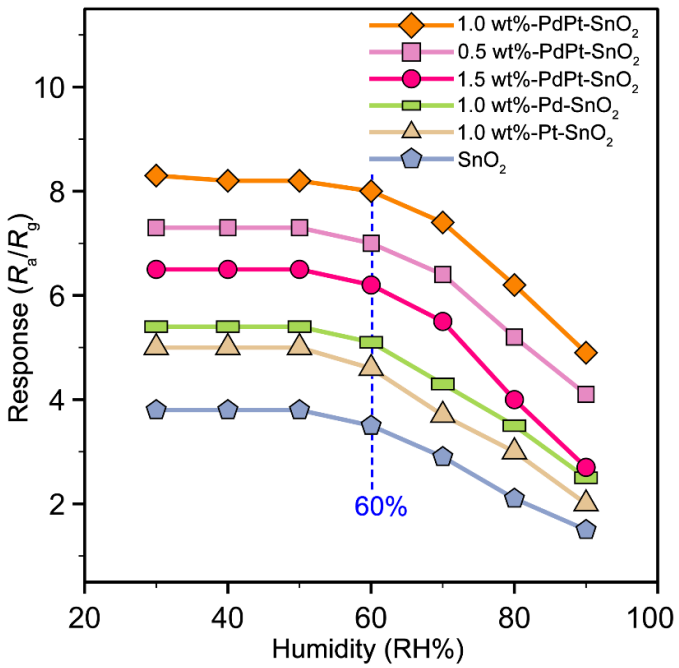



**Figure S5**. Humidity interference tests for the MEMS sensors.