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Supplementary Information for

Enhanced sensitivity of GHz surface acoustic wave humidity sensor based on $Ni(SO_4)_{0.3}(OH)_{1.4}$ nanobelts and NiO nanoparticles

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Sample preparations for contact angle measurements

The NSOH NBs and NiO NPs have good solubility in water due to their hydrophilic functional groups. At first, the as-prepared NSOH NBs and NiO NPs were dissolved in DIW with the concentration of 10 mg ml^{-1}. Then the dispersions were homogenized in an ultrasonic bath sonicator for 30 min. As for contact angle measurements, Si wafer was diced into pieces of 2 cm × 2 cm working as the substrates. Thereafter, the NSOH and NiO films were deposited by spin-coating at 1000 rpm for 30 sec. Finally, the samples were kept at 65 ℃ in an oven to allow the evaporation of water. The representative SEM images of the surfaces are shown in Fig S1.

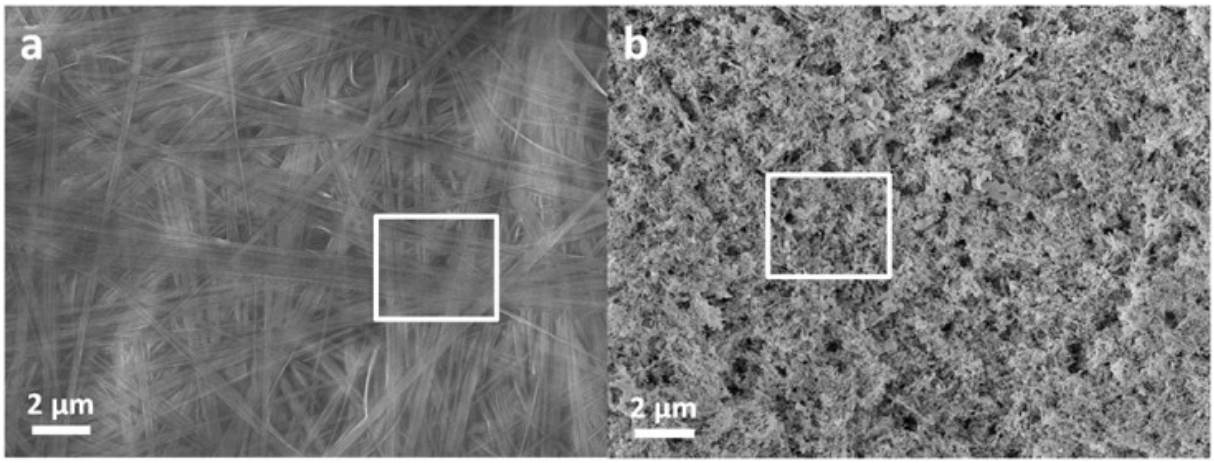

Figure S1 (a) and (b) representative SEM images of the NSOH NBs and NiO NPs for contact angle measurements. The film based on NiO nanoparticles was more porous than that of NSOH nanobelts. The EDS spectra were also collected from the rectangle enclosed areas.

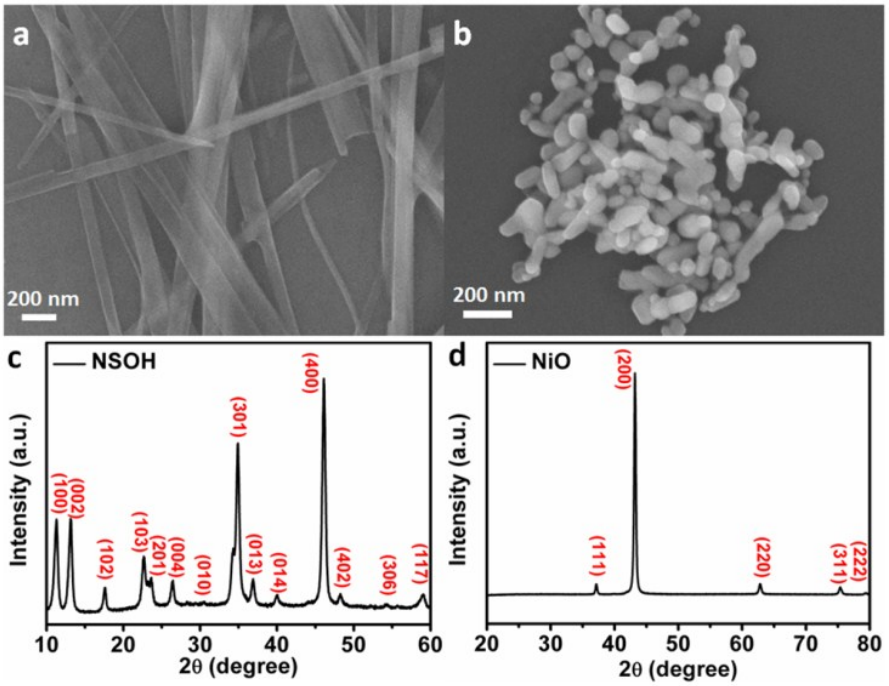

Figure S2 Typical SEM images (a-b) and XRD patterns (c-d) of the NSOH NBs and NiO NPs kept in air for about half a year. Both the structures and XRD patterns exhibit little change after storing in air ambient.