

Supplementary Information for:

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**High-sensitivity hydrogen gas sensors based on
Pd-decorated nanoporous poly(aniline-*co*-
aniline-2-sulfonic acid):poly(4-styrenesulfonic
acid)**

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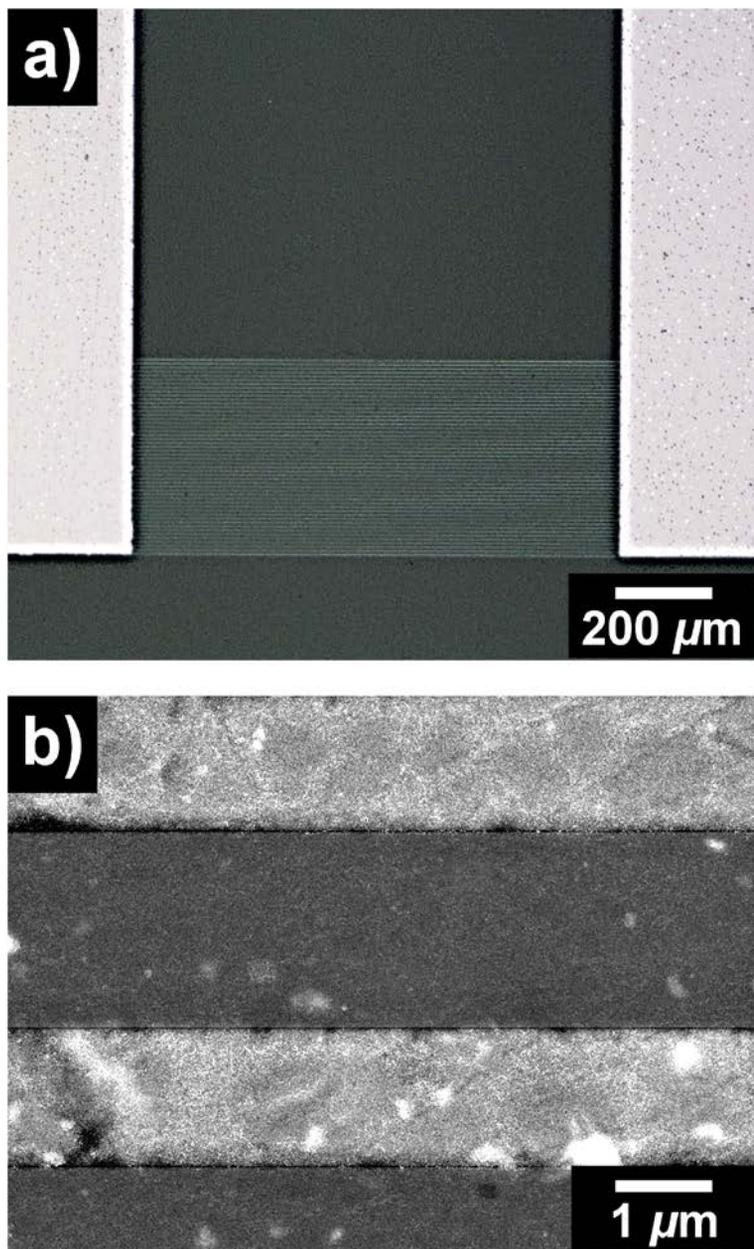


Figure S1. (a) Optical microscopy and (b) FE-SEM images of interdigitated microelectrode used.

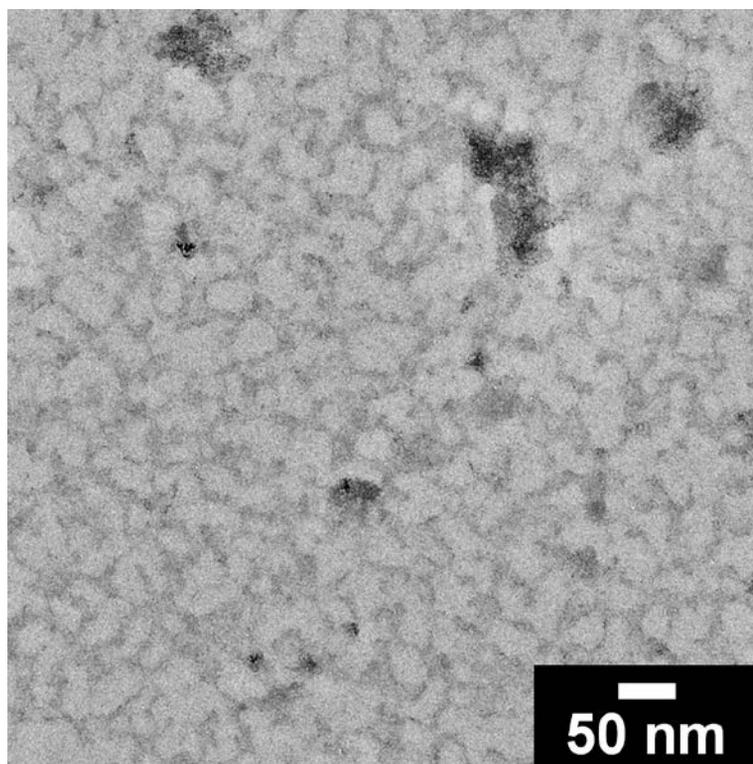


Figure S2. TEM image of pristine P(ANI-*co*-ASA):PSS nanostructure.

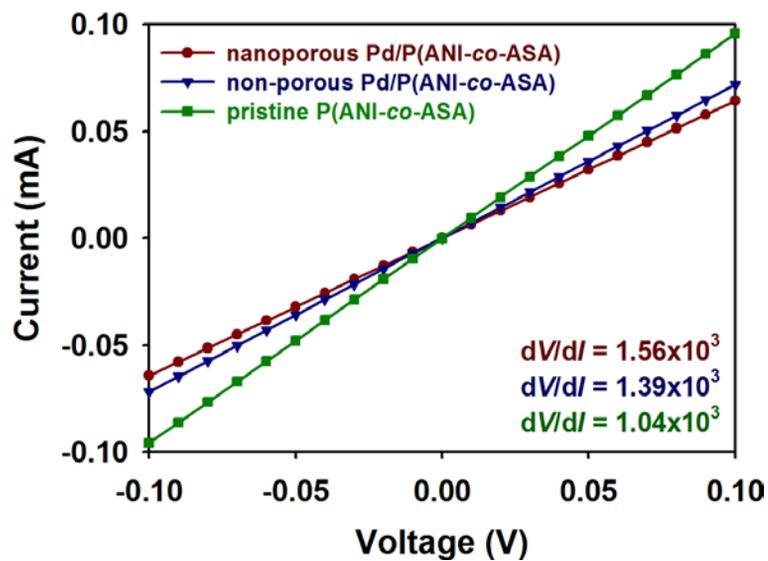


Figure S3. *I-V* characteristics of P(ANI-co-ASA):PSS nanostructures with thickness of 10 μm integrated in the sensor substrate at a scan rate of 10 mV s^{-1} .

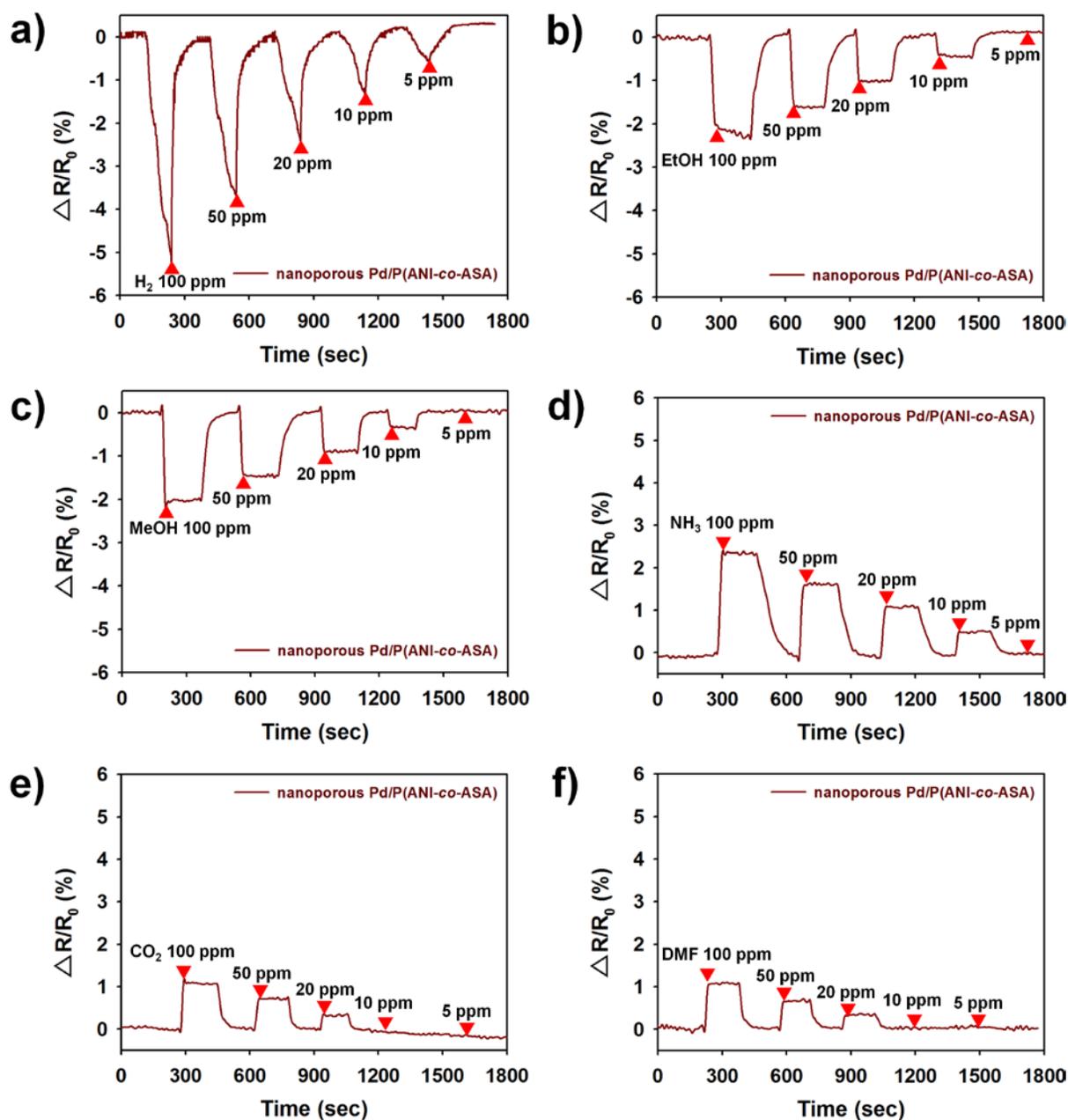


Figure S4. Real-time responses of P(ANI-co-ASA):PSS nanostructures upon cyclic exposure to various analytes (5 to 100 ppm) and synthetic air streams: (a) H₂, (b) EtOH, (c) MeOH, (d) NH₃, (e) CO₂, and (f) DMF.

Table S1. Conductivity of Pd-decorated nanoporous P(ANI-co-ASA):PSS nanostructure as a function of heating temperature.

heating temperature (°C)	^a conductivity (S cm ⁻¹)
25	6.20±0.30
50	6.15±0.30
100	5.40±0.35
150	4.20±0.40
200	0.75±0.45

*a*P(ANI-co-ASA):PSS nanostructures with thickness of 5 μm were measured.

Table S2. BET Surface areas of P(ANI-co-ASA):PSS nanostructures obtained by N₂ adsorption/desorption characteristics

Sample	surface area (m ² g ⁻¹)	total pore volume (cm ³ g ⁻¹)
Pristine	8.7	0.04
Pd-decorated non-porous	13.7	0.06
Pd-decorated nanoporous	23.1	0.10