Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supplemental

Polarisation tunable piezo-catalytic activity of Nb-doped PZT with low Curie temperature for efficient H_2 generation and CO_2 reduction

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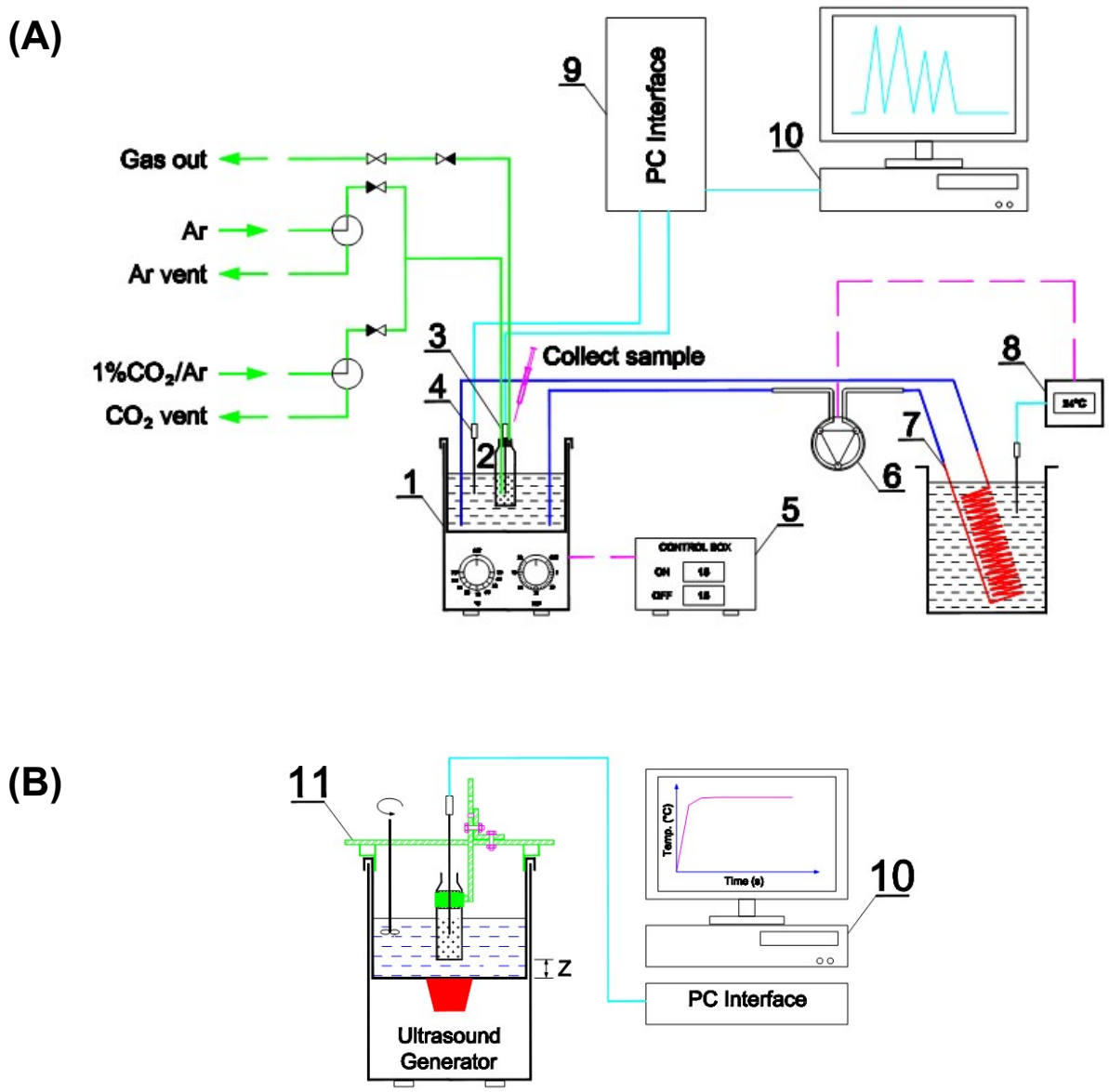


Figure S1. (A) Complete experimental setup for piezo-catalysis based on double-bath-type sonoreactor, and (B) experimental setup for calorimetric measurement.

1 - Ultrasonic bath; 2 – Reactor vial; 3 – Inside thermocouple; 4 – Outside thermocouple; 5 – Timer controller; 6 – Peristaltic pump; 7 – Cooling coil; 8 – Cooling bath thermocouple; 9 – Interface; 10 – Computer; 11 – Specific cover

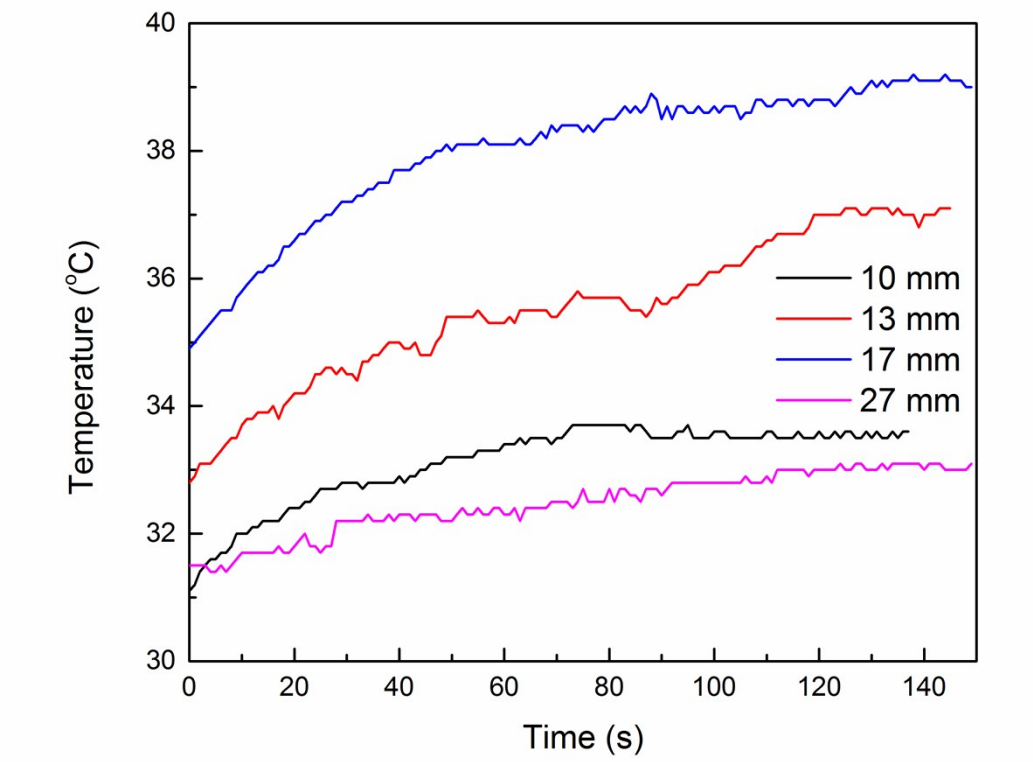
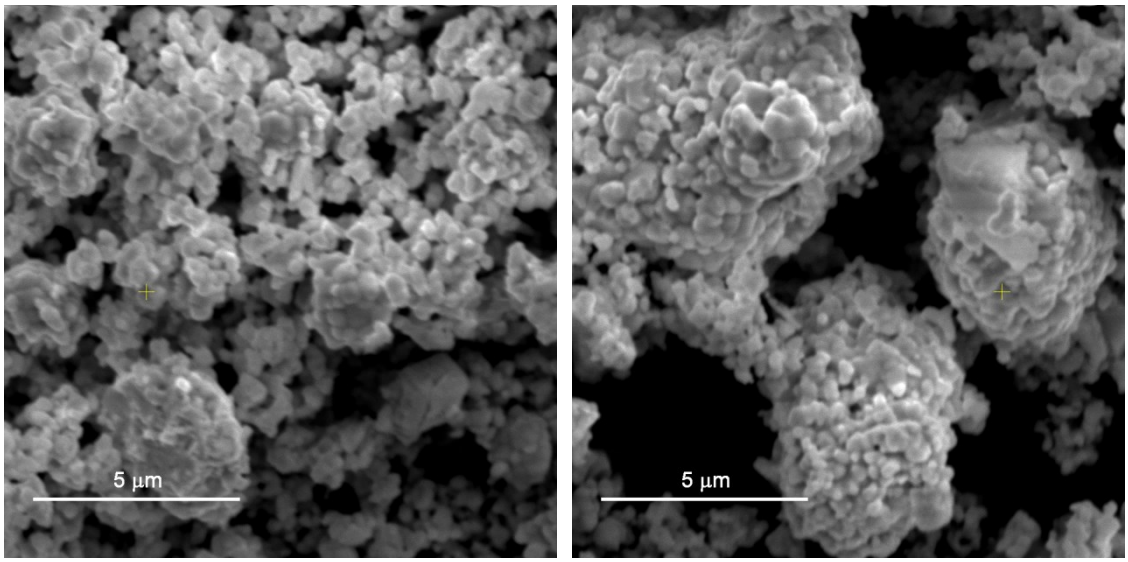


Figure S2. Temperature profiles of calorimetric measurements at different height locations of z = 10, 13, 17, and 27 mm, as indicated in Figure S1(B).



(A) (B)

Figure S3. SEM images of the used PZTN powders at dosage of (A) 0.1 g/L. and (B) 1.0 g/L

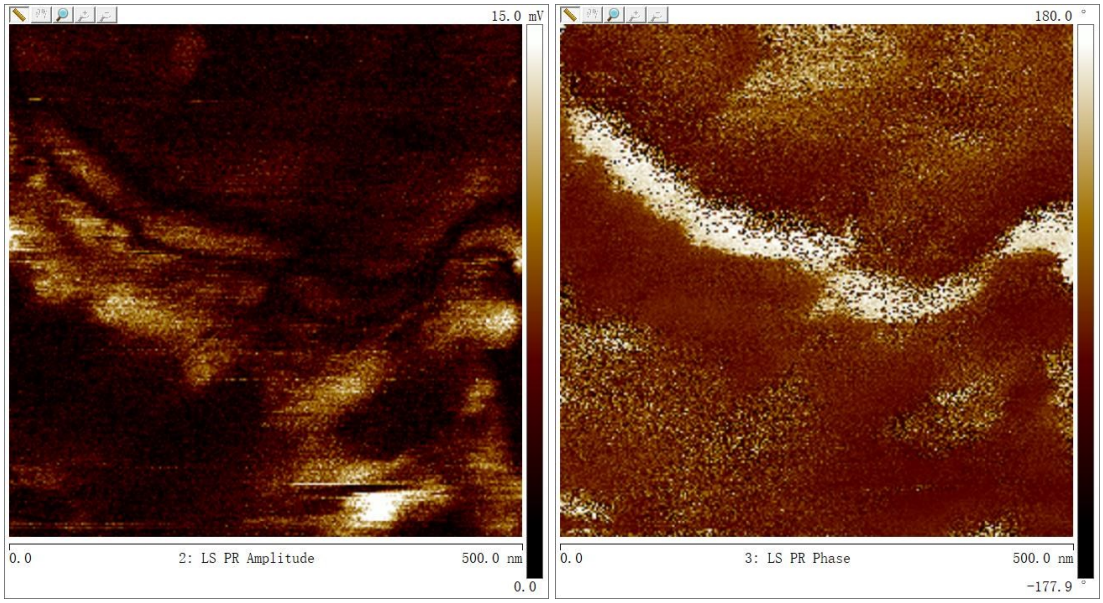


Figure S4. PFM images of PZTN powders. (A) 2D Amplitude image, (B) PFM phase image.

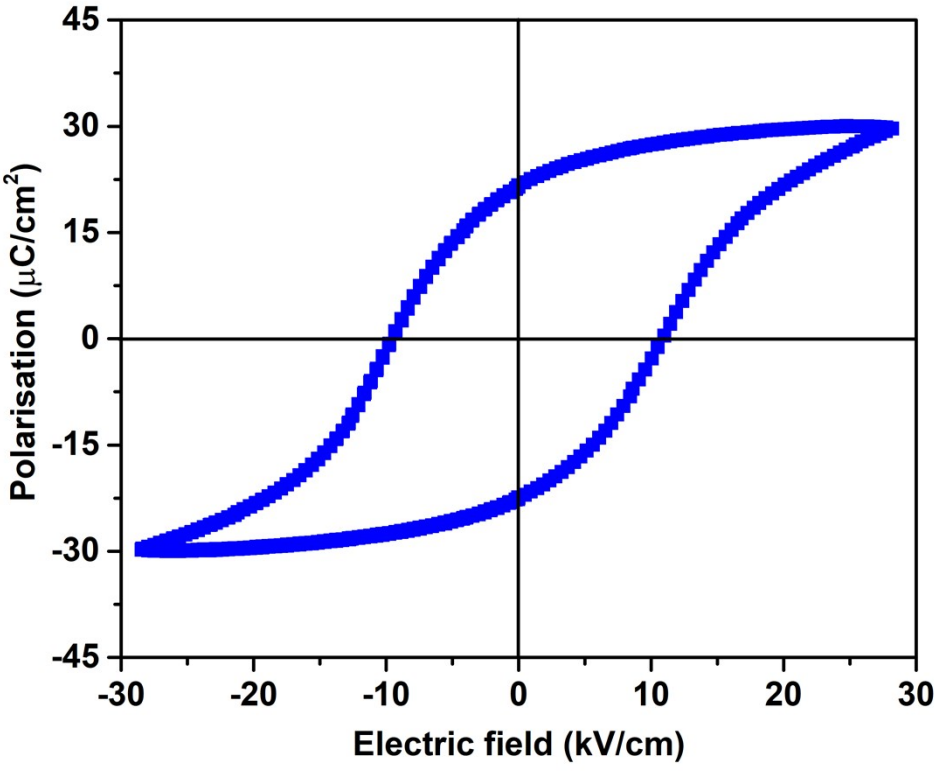


Figure S5. Room-temperature P-E hysteresis loop of the unpoled dense PZTN disk.

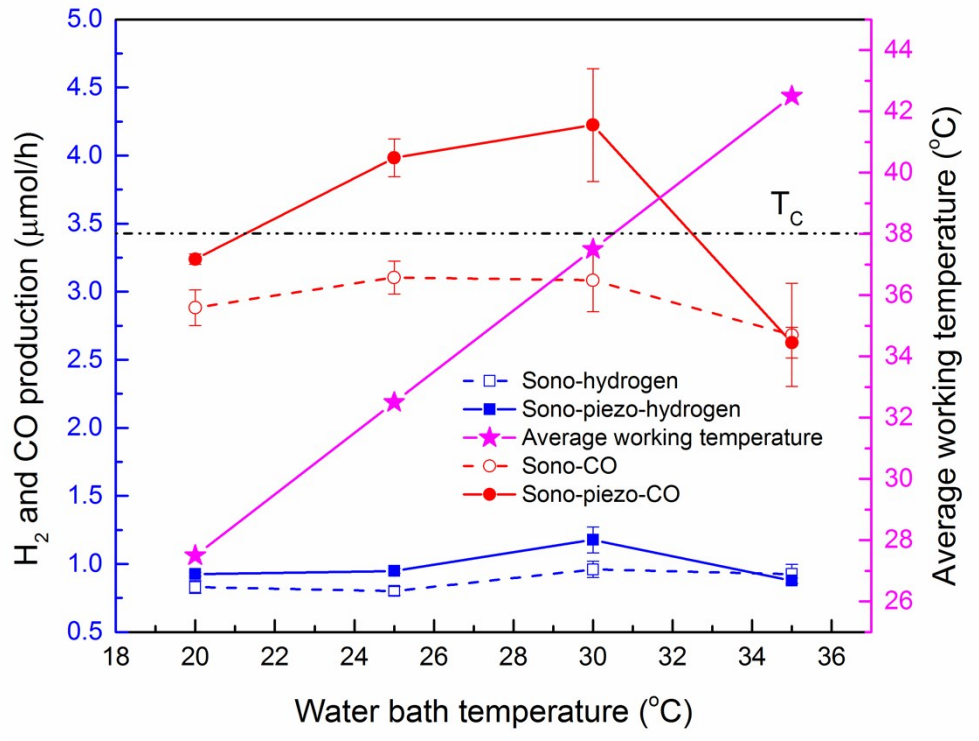


Figure S6. Effect of water bath temperature on the hydrogen and CO production rate (catalyst dosage 0.1g/L , t_{react} = 30 min)