

SUPPLEMENTAL MATERIAL

TO

Highly Active and Carbon-Resistant Nickel Single-Atom Catalysts for Methane Dry Reforming

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Dedicated to the 70th anniversary of Dalian Institute of Chemical Physics, CAS

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Section 6: STEM images of 0.5Ni₁/HAP-SAC catalyst and AC HAADF-STEM image of 0.5Ni₁/HAP-SAC catalyst without reduction.

Section 1: Details of the experimental setup

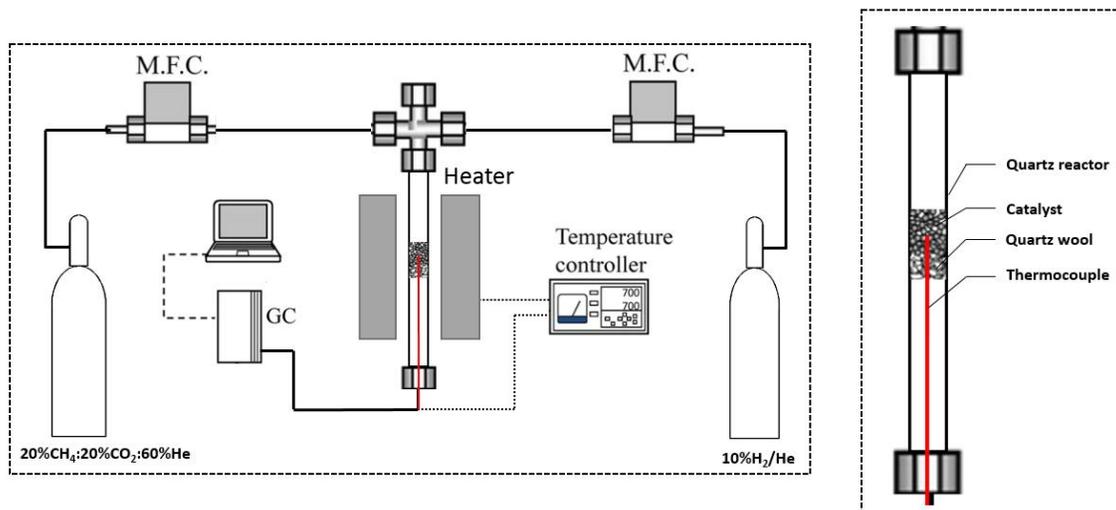


Figure S1 schematic of experimental setup.

Section 2: Textural properties of hydroxyapatite (HAP) support

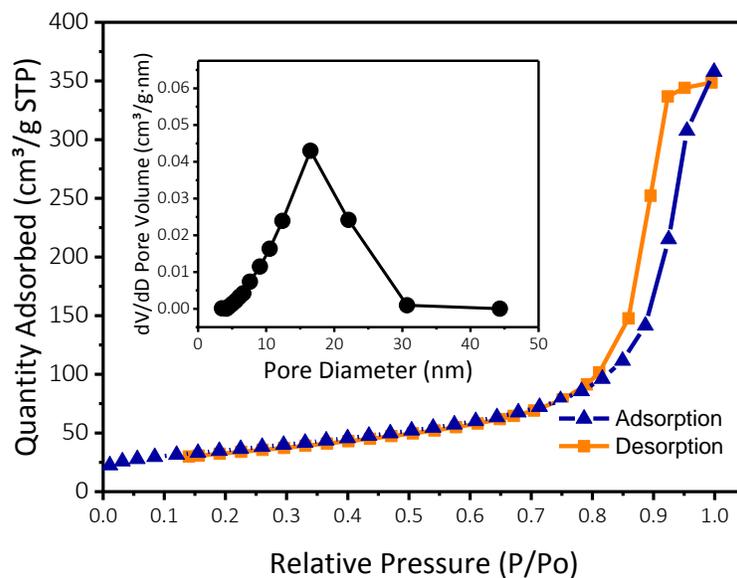


Figure S2 Nitrogen adsorption-desorption isotherms and the corresponding pore size distribution of stoichiometric hydroxyapatite (HAP).

Section 3: STEM image of Ni/HAP catalysts without reduction.

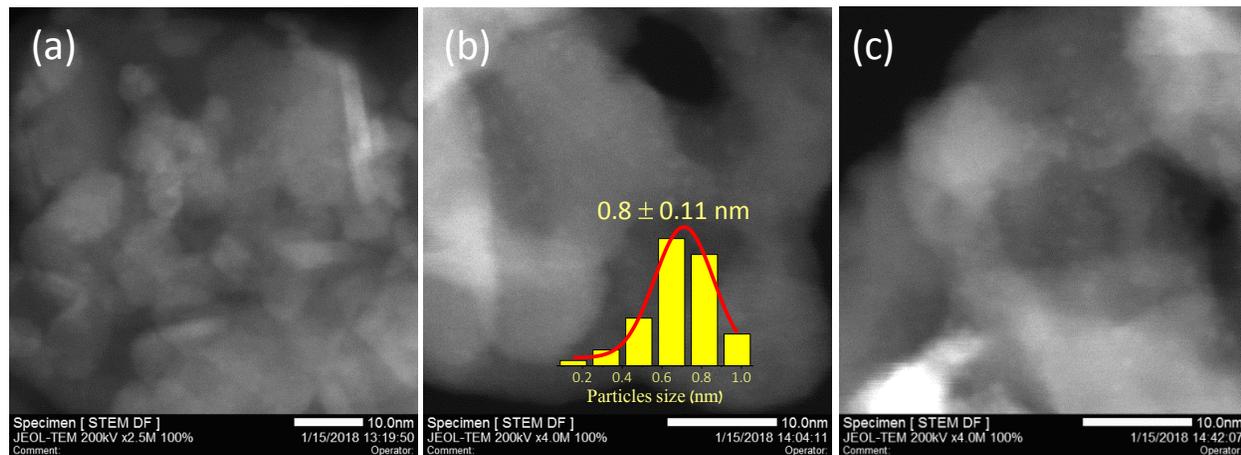


Figure S3 STEM image of (a-b) 5Ni/HAP-NP catalysts without reduction, (c) STEM image of 10Ni/HAP-NP catalyst without reduction.

Section 4: Details STEM images of 5Ni/HAP-NP and 10Ni/HAP-NP catalysts

reduced at 500 °C.

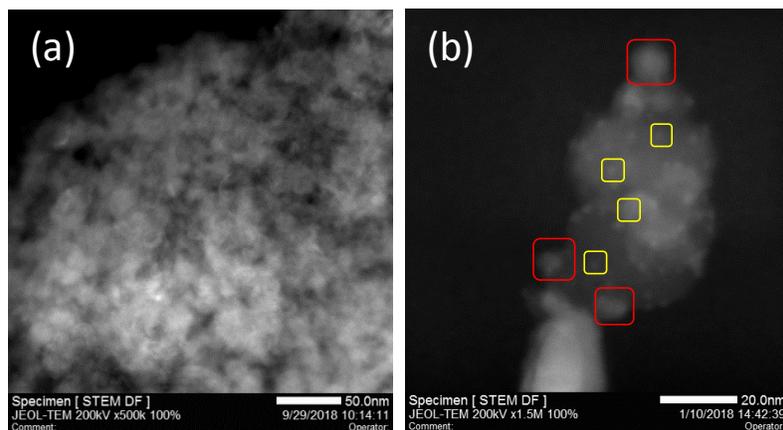


Figure S4 STEM image of (a) 5Ni/HAP-NP and (b) 10Ni/HAP-NP catalysts reduced at 500 °C, yellow and red squares indicate respectively some typical nickel nanoclusters and nanoparticles.

Section 5: Dark-field scanning TEM image and EDX elemental mapping of 5Ni/HAP-NP reduced at 500 °C.

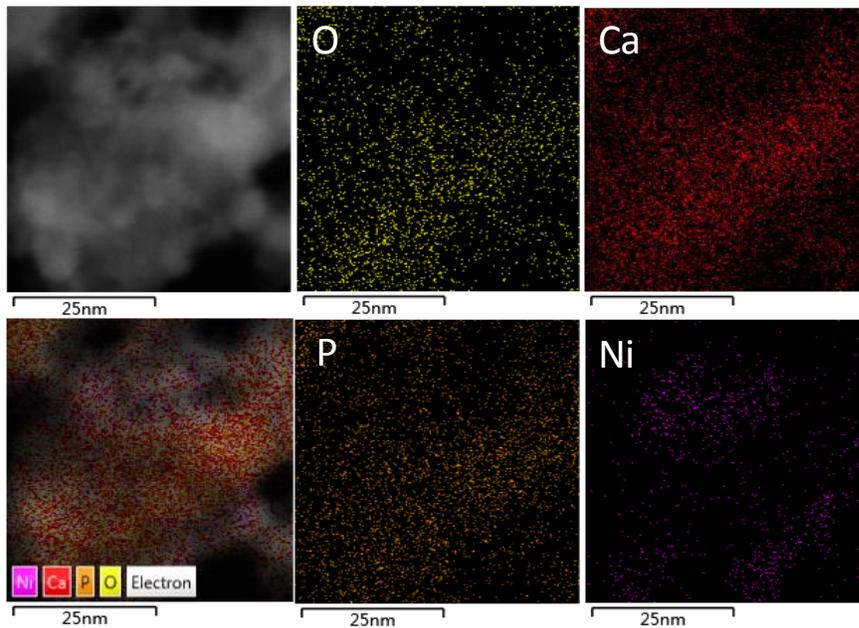


Figure S5 Dark-field scanning TEM image and EDX elemental mapping of 5Ni/HAP-NP reduced at 500 °C.

Section 6: STEM images of 0.5Ni₁/HAP-SAC catalyst and AC HAADF-STEM image of 0.5Ni₁/HAP-SAC catalyst without reduction.

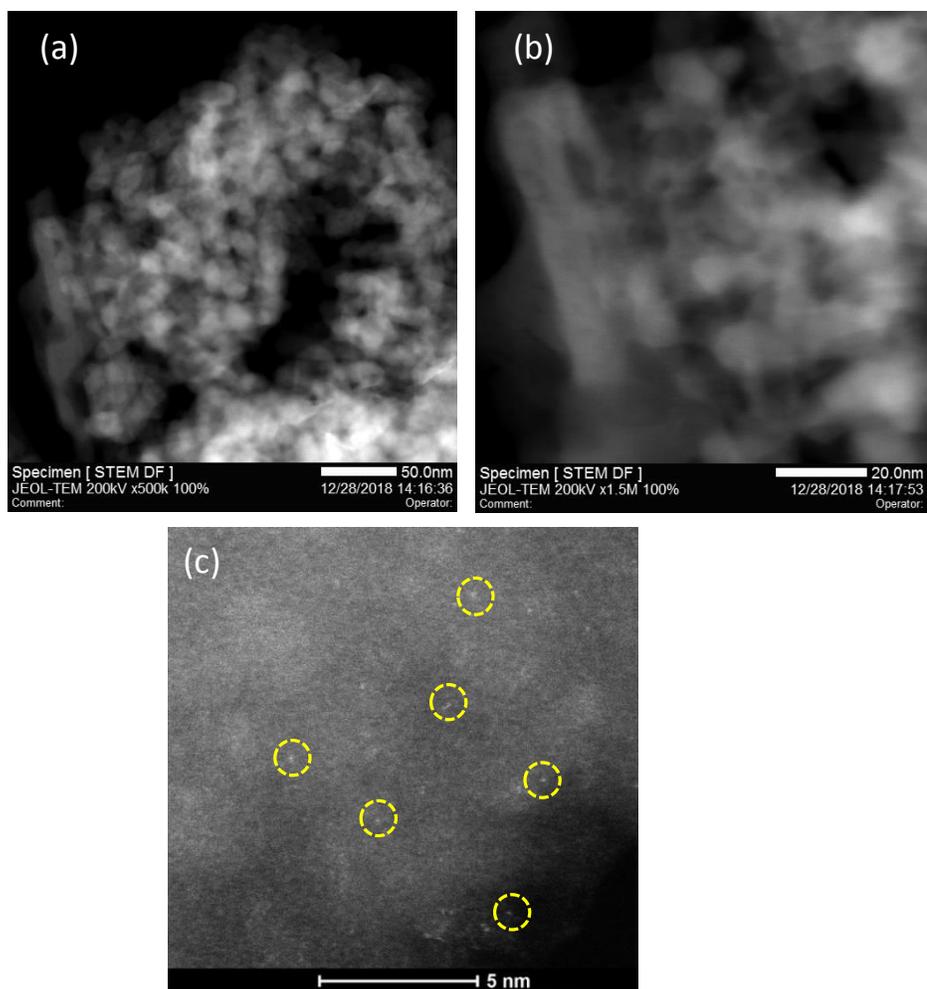


Figure S6 (a) and (b) STEM images of 0.5Ni₁/HAP-SAC catalyst without reduction. (c) AC HAADF-STEM image of 0.5Ni₁/HAP-SAC catalyst without reduction, yellow circles indicate some typical nickel single atoms.