Supplementary material

Nickel Sulfides Decorated SiC-foam for the Low Temperature Conversion of H_2S into Elemental Sulfur

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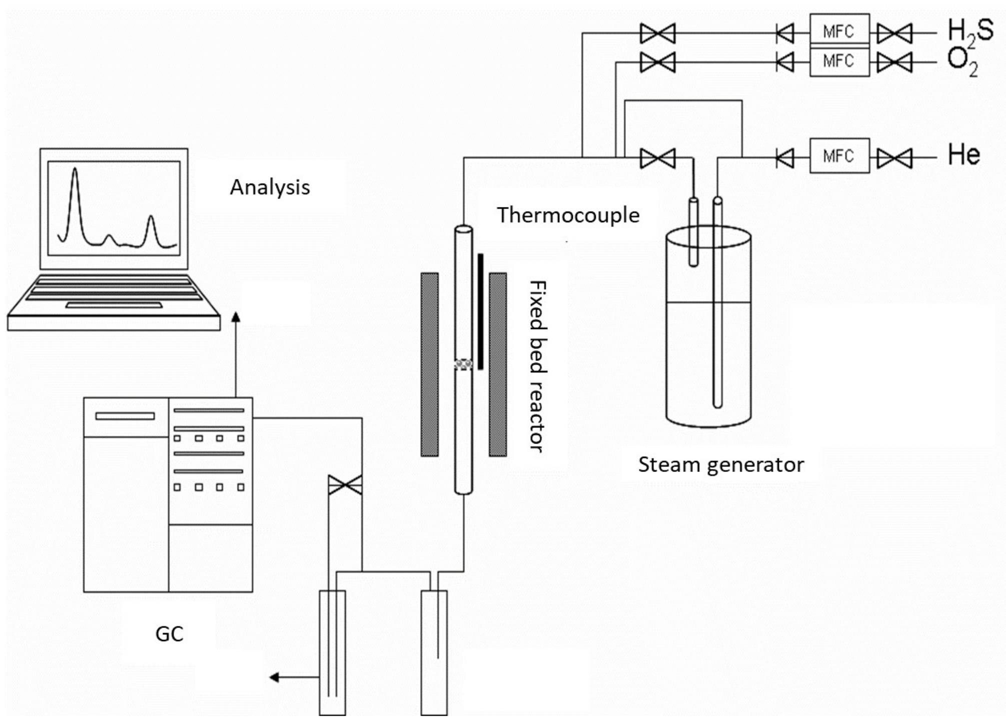

Figure S1. Schematic illustration of a desulfurization apparatus for testing NiS_2-decorated SiC samples

Table S1. Specific surface area (SSA) and pore size distribution of pristine SiC^{foam} and its composites. SSA values and total pore volume of SiCring and SiCextr have been also reported for the sake of completeness.

	SSA[a] (m^2/g)	Total pore volume (cm^3/g)[b]	Average pore size (nm)
SiC^{foam}	30	0.17	25
NiO/SiC^{foam}	35	0.12	18
NiS_2/SiC^{foam}	31	0.13	16
SiC^{ring}	26	0.14	23

SiC^{extr}	25	0.17	26

[a] Brunauer-Emmett-Teller (BET) specific surface area (SSA) measured at T = 77 K. [b]Total pore volume determined by using the adsorption branch of N_2 isotherm at p/p_0 = 0.98.

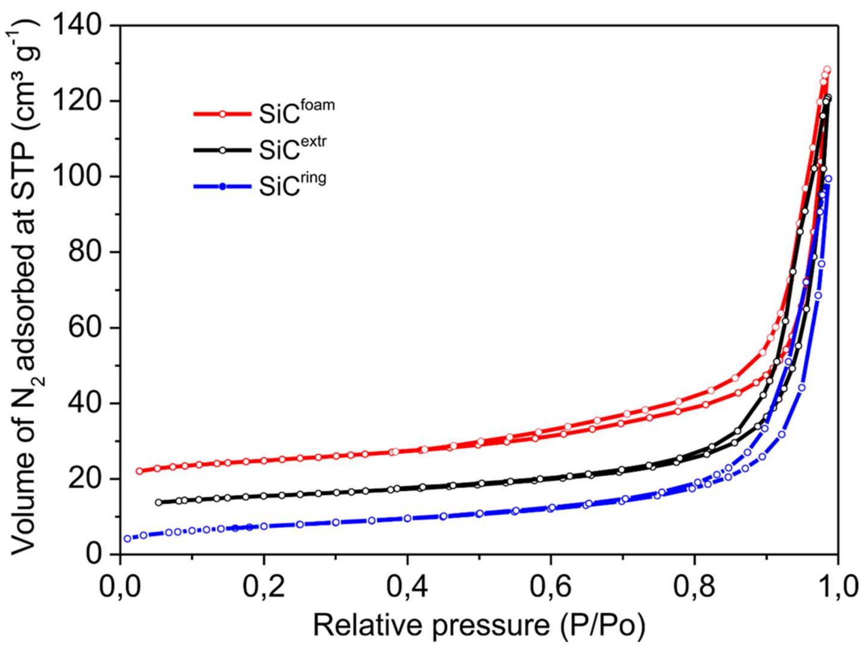

Figure S2. Nitrogen adsorption−desorption isotherm linear plots (BET) of **SiC^{foam}** (-○-), **SiC^{extr}** (-○-) and **SiC^{ring}** (-○-) recorded at 77 K.

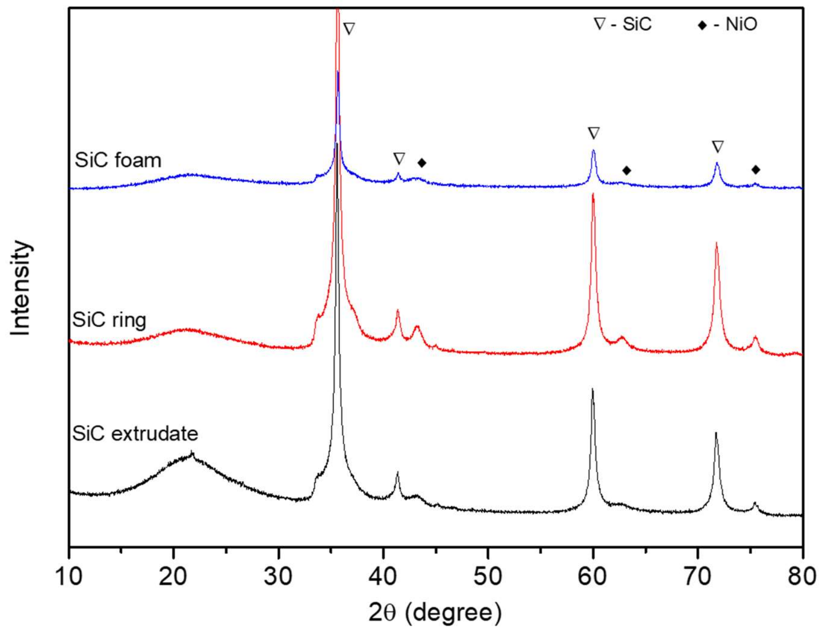

Figure S3. PXRD analysis of freshly prepared NiO on SiC^{foam}, SiC^{extr} and SiC^{ring}.

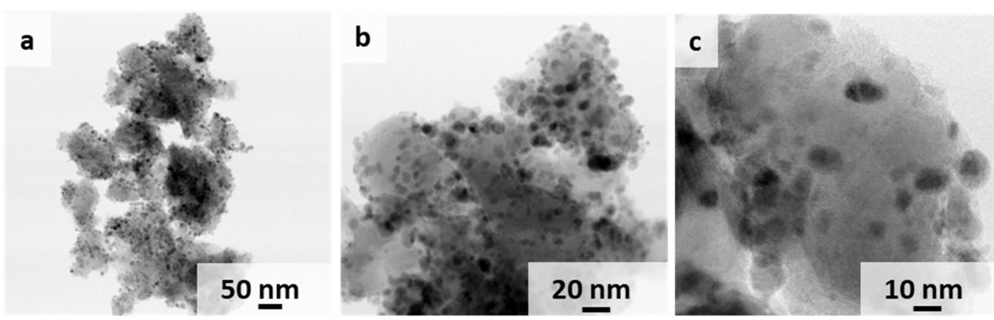

Figure S4. Representative TEM micrographs of NiO nanoparticles prepared following the procedure outlined in the manuscript for SiC supports decoration. A finely powder SiC support has been selected for the preparation of Ni-based composites to be employed for TEM characterization analysis. All images show a relatively well dispersed NiO NPs with size distribution between 5 and 8 nm.

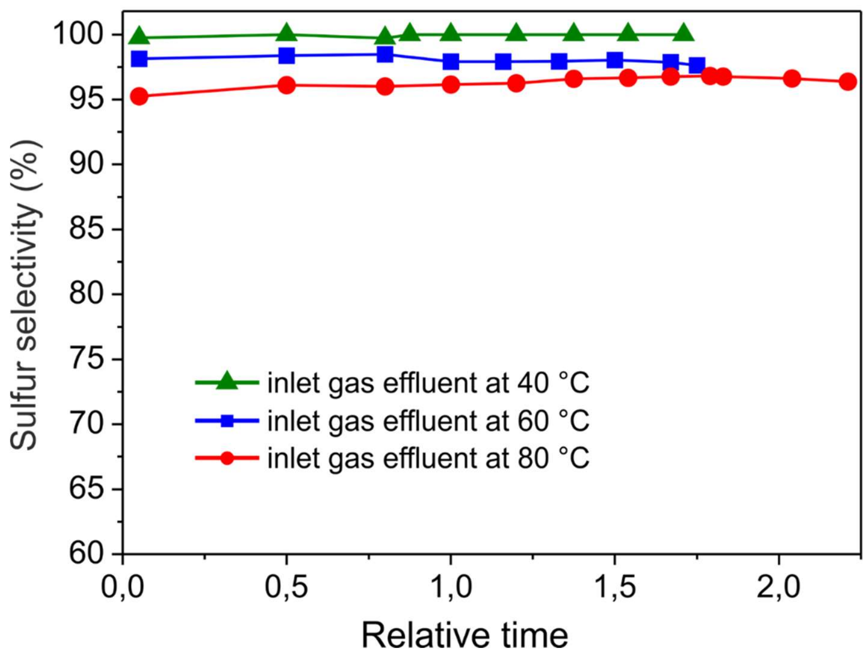

Figure S5. Sulfur selectivity on NiS_2/SiC^{foam} catalyst in the desulfurization process at variable temperatures. Reaction conditions: [H_2S] = 1 vol.%, [O_2] = 2.5 vol.%, O_2-to-H_2S ratio = 2.5, [H_2O] = 30 vol.%, balance helium, reaction temperature = 40, 60 and 80°C, GHSV (STP) = 1200 h^{-1}.