Supporting Information

Surfactant assisted formation of Ruthenium nanochains under mild conditions and their catalytic CO oxidation activity

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Characterisation of Ruthenium Nanostructures

Characterization of the catalysts was done by

X-ray Diffraction Analysis: Powder X-ray diffraction (XRD) was measured on a PANalytical X'pert Pro dual goniometer diffractometer working under 40 kV and 30 mA. The Cu Kα (1.5418 Å) radiation was used with a Ni filter.

UV-Visible Spectroscopy: Varian Cary 50 Conc UV–Vis spectrophotometer with a dual beam source was used for the UV-Visible analysis.

Transmission Electron Microscopy (TEM):TEM images were recorded by FEI Tecnai TF-30 and TF-20 electron microscope, operating at 300 kV and 200 kV .

The Inductively coupled Plasmon analysis was done using Spectro Arcos ICP-OES.

The Dynamic Light Scattering experiments and zeta potential measurements were done with Brookhaven Instruments Corporation-90 plus Nanoparticle size analyser equipped with a 632.8 nm laser source.

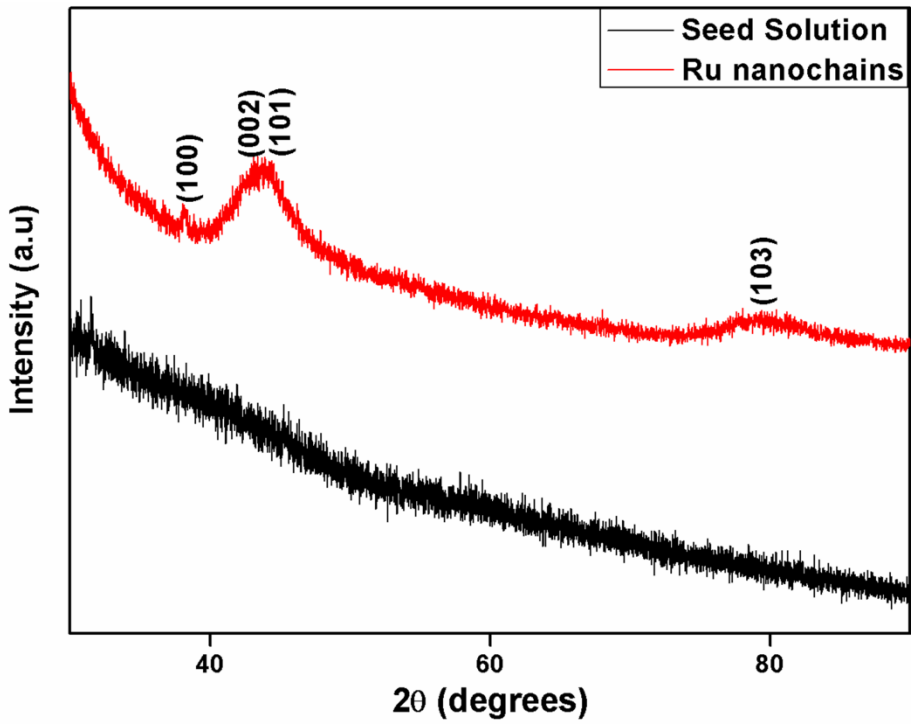

Fig S1: The XRD reflections of as synthesised Ru nanoseeds(~3.5nm) and hcp Ru nanochains.

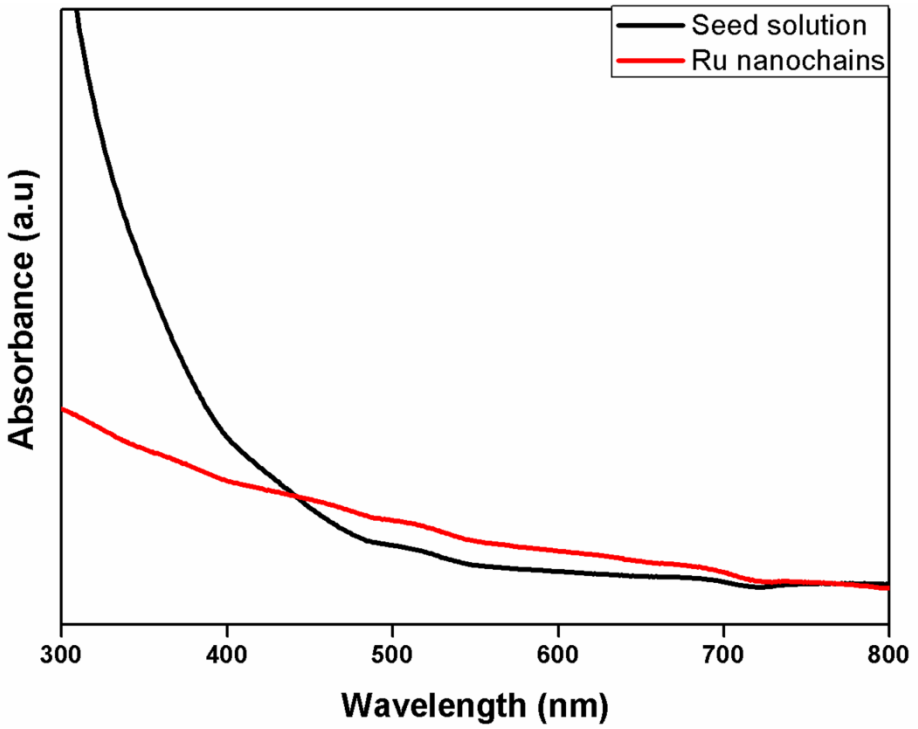

Fig S2: The UV-Visible spectrum of Ru seed solution and Ru nanochains.

Time (minutes)	Mean Diameter (nm)
0	68
30	102
60	127
90	253
120	262
150	454

Table1: The table shows the variation of mean diameter of Ru nanochains with time as obtained from DLS experiments

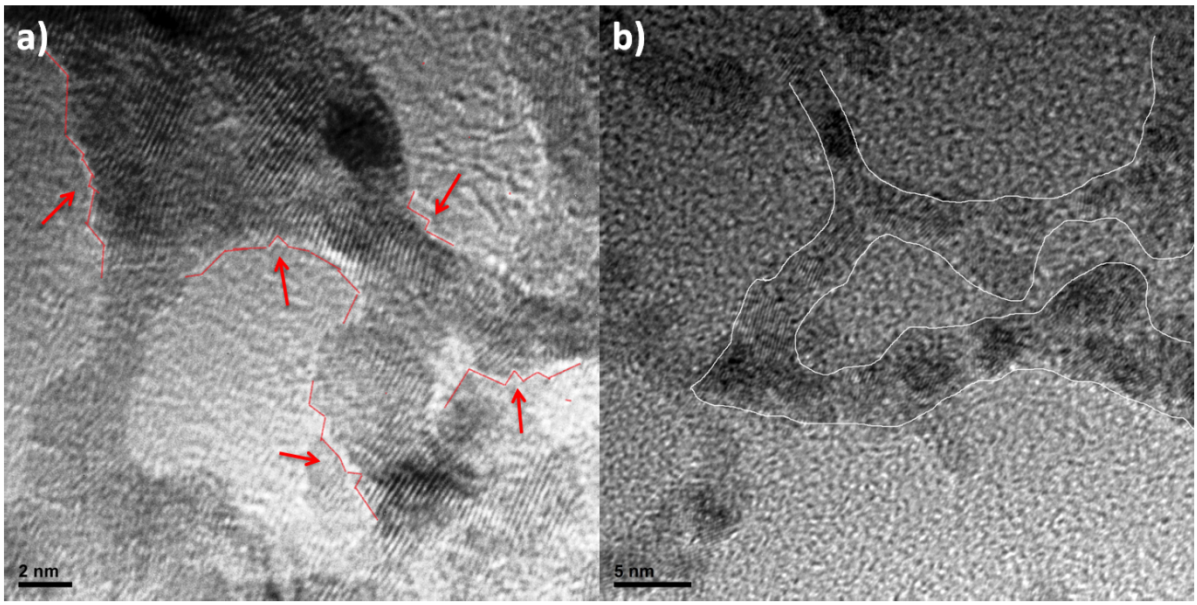

Fig S3: TEM image showing the under co-ordinated edges and the extended network of the Ru nanochains that are formed.

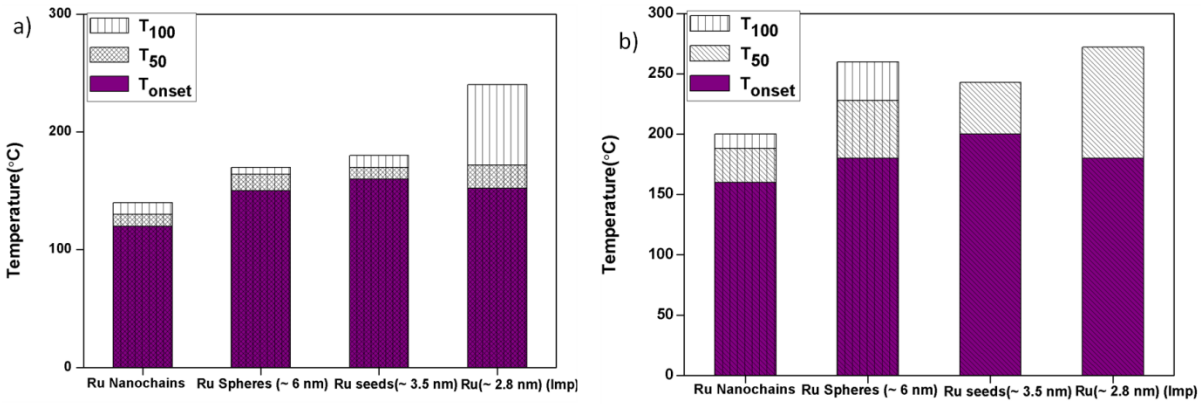

Fig S4: The CO oxidation activity profile for the Ru nanostructures supported on different supports a) TiO_2 b) SiO_2

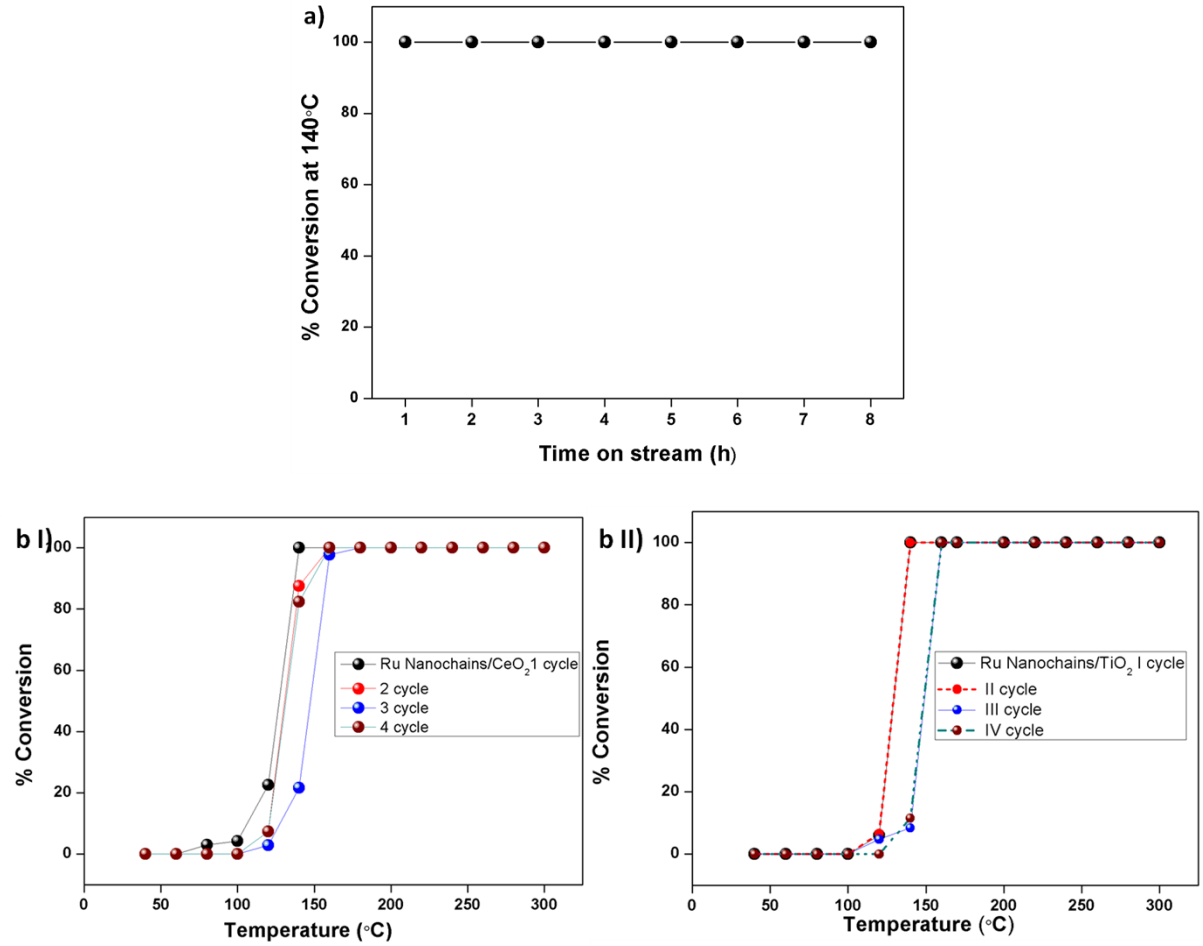

Fig S5:a) TOS of Ru nanochains/CeO_2 after Ist cycle at temperature of full conversion and b)stability of the I) Ru nanochains/CeO_2 and II) Ru nanochains/TiO_2 catalyst for four cycles.

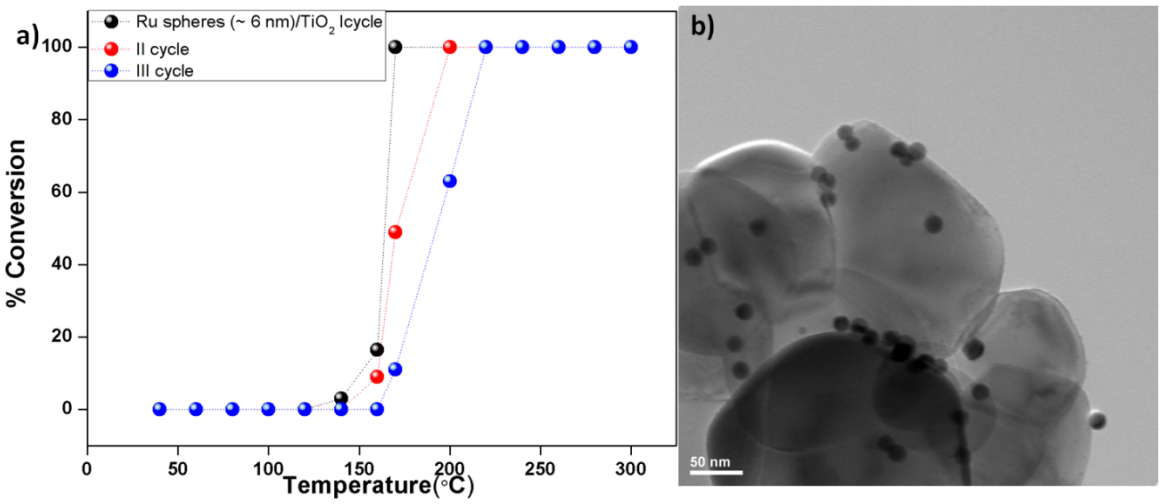

Fig S6: The CO oxidation plot for Ru spheres (~ 6 nm)/TiO_2) upto three cycles and b) TEM of the spent catalyst which shows the increase in particle size after reaction.

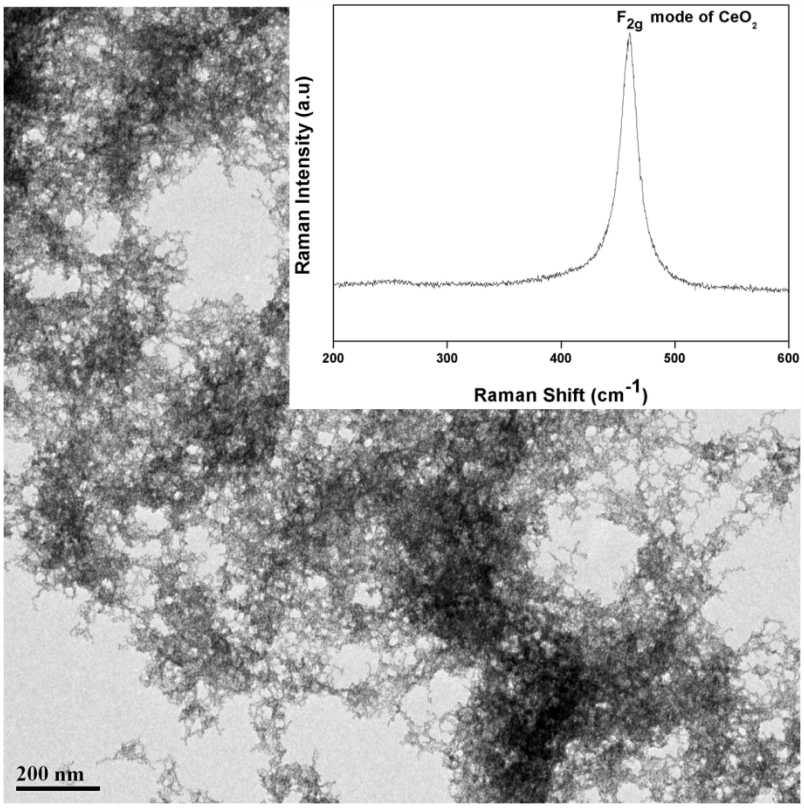

Fig S7: The TEM image showing the morphology of the spent catalyst supported on ceria, the inset shows the F2g vibrational mode of the cubic fluorite CeO_2