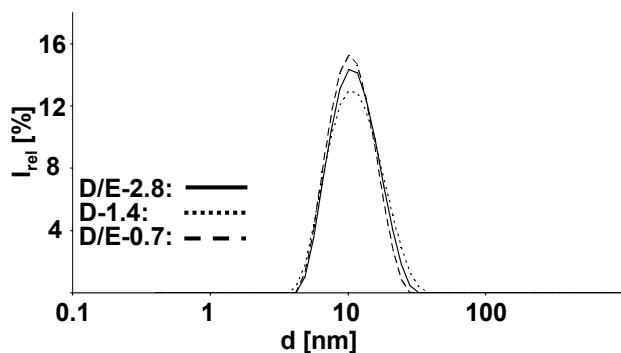


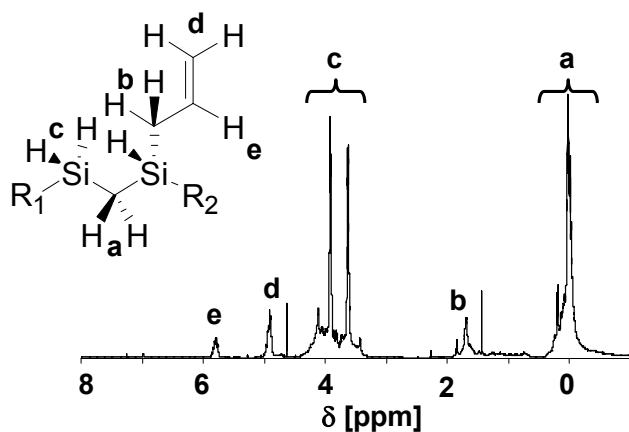
Platinum induced crosslinking of polycarbosilanes for the formation of highly porous CeO₂/silicon oxycarbide catalysts

Emanuel Kockrick,* Robert Frind, Marcus Rose, Uwe Petasch, Winfried Böhlmann, Dorin Geiger, Mathias Herrmann, and Stefan Kaskel*

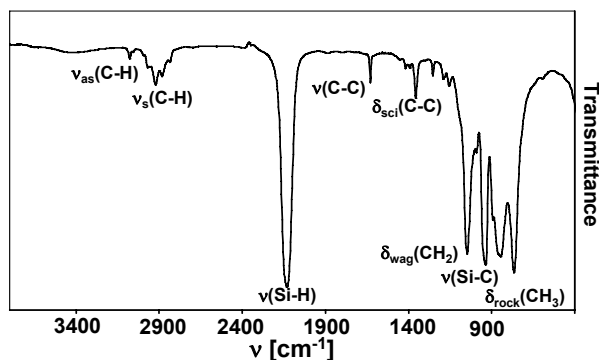
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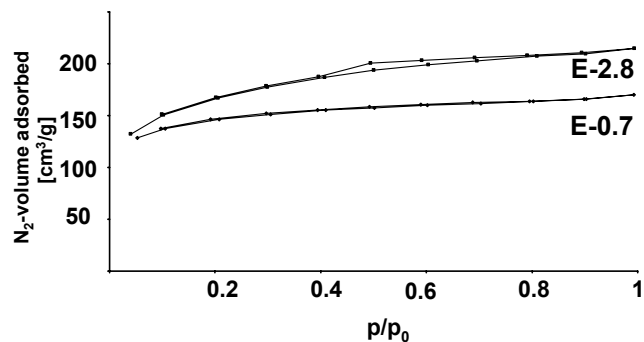
S 1. DLS measurements of microemulsion systems with different platinum amounts after ammonia addition.



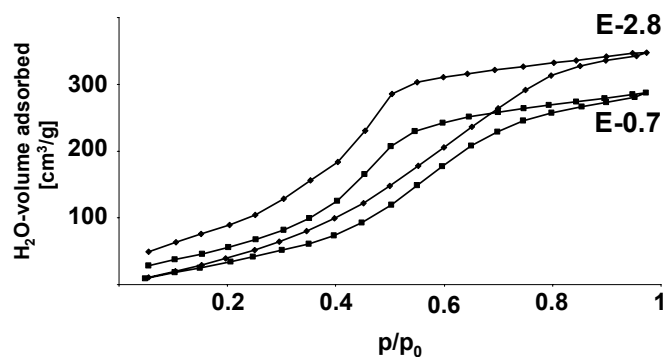
10 S 2. ¹H-NMR spectra of allyl group containing commercially available polycarbosilane SMP-10.



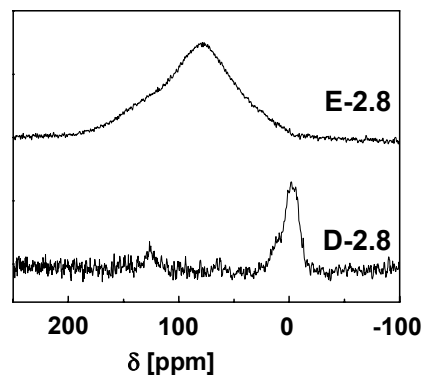
S 3. FT-IR spectra of polycarbosilane SMP-10.



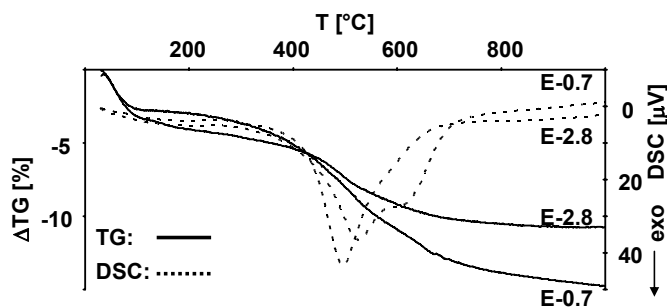
15 S 4. Nitrogen physisorption isotherms for extraction derived CeO₂/Pt-PCS composites containing different concentrations of the platinum species as cross linking catalyst.



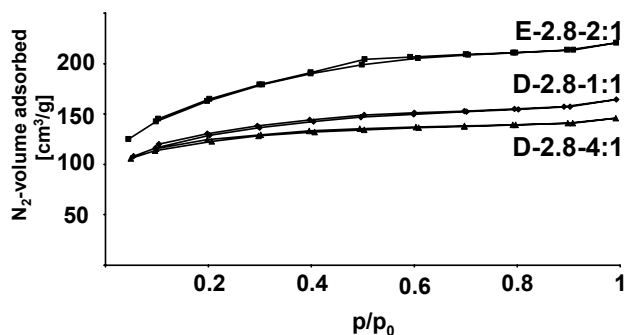
20 S 5. Water vapour physisorption measurements for extraction derived CeO₂/Pt-PCS composites with different Pt cross linker concentrations.



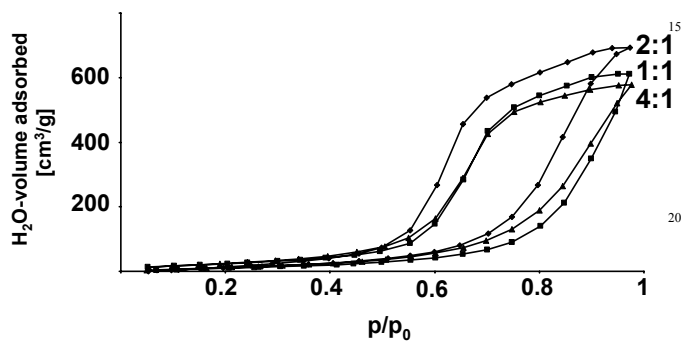
S 6. ¹³C MAS NMR spectra of the cross linked ceria polycarbosilanes prepared by distillation (D-2.8) and extraction method (E-2.8).



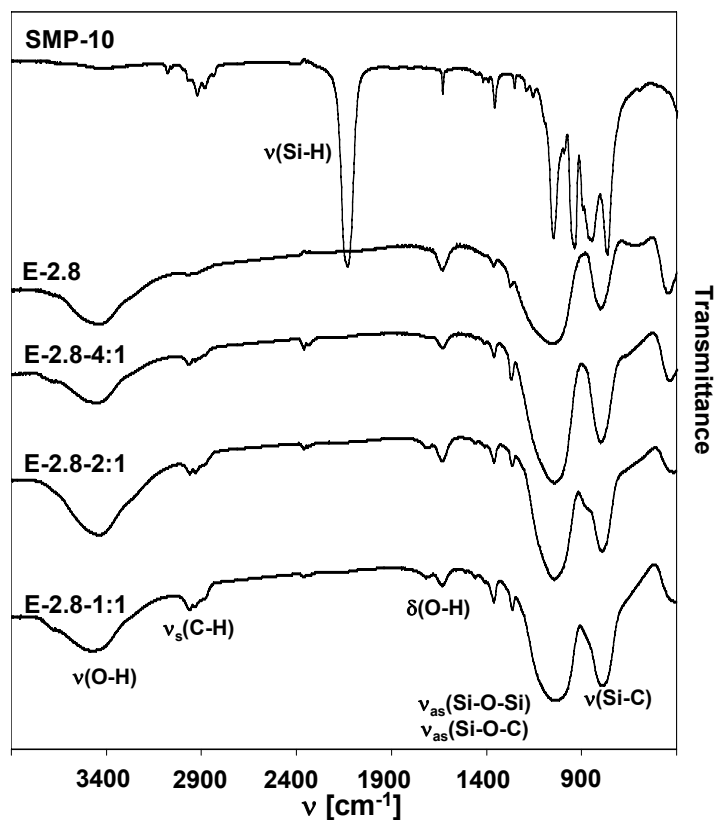
S 7. Thermogravimetric measurements coupled with differential scanning calorimetry of extraction derived polymers with low and high Pt concentrations in air.



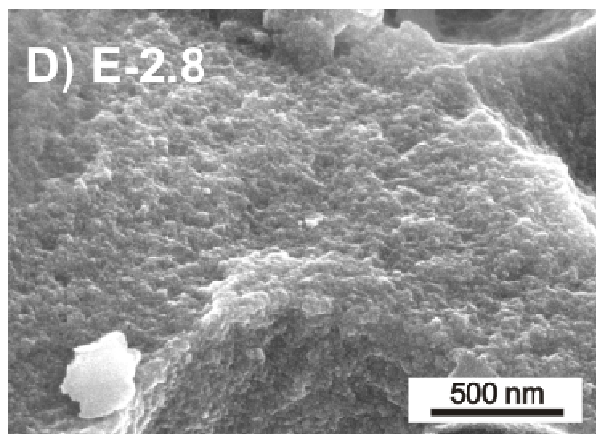
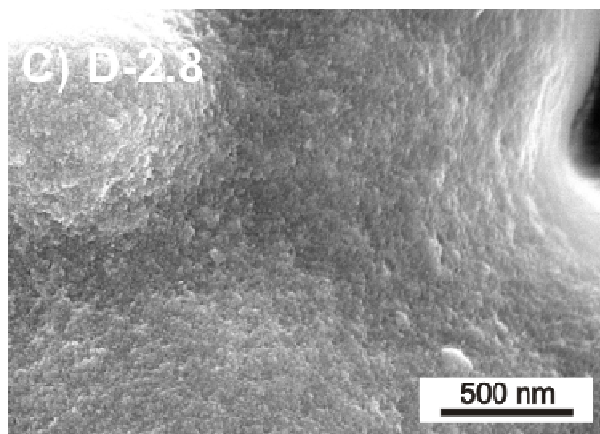
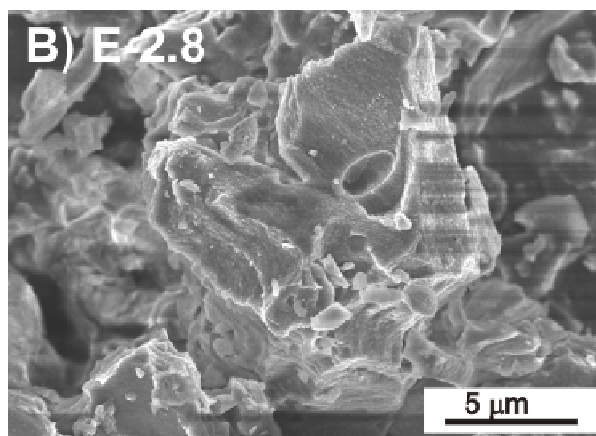
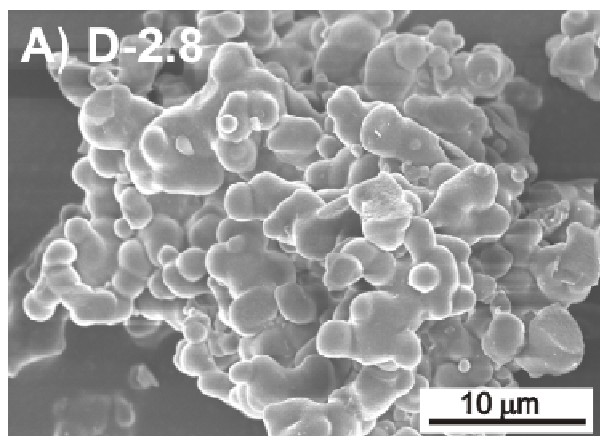
S 8. Nitrogen physisorption measurements for extraction derived $\text{CeO}_2/\text{Pt-PCS}$ composites D-2.8 with varying SMP-10 to divinylbenzene mass ratios as starting monomer.



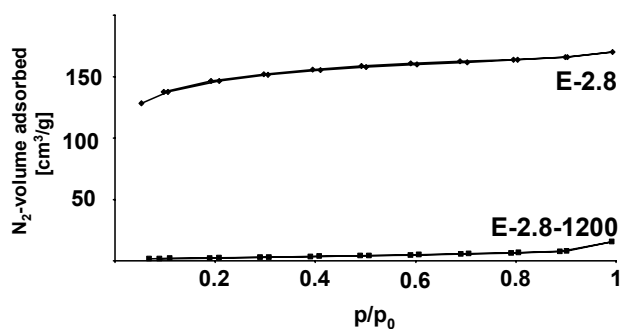
S 9. Water vapour physisorption isotherms of distillation derived solid $\text{CeO}_2/\text{Pt-PCS}$ composites D-2.8-X:Y containing different mass ratios polycarbosilane SMP-10 (X) and to and DVB (Y) as monomer mixture.



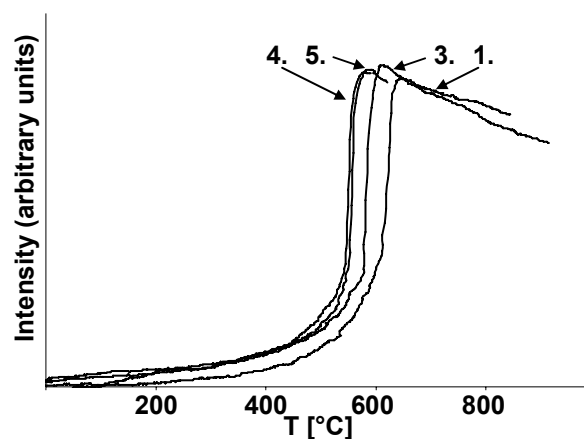
S 10. FT-IR spectra of SMP-10 and extraction derived polymeric structures containing different starting ratios of SMP-10 to DVB as monomers.



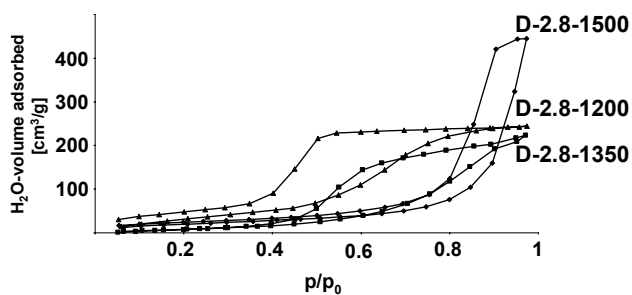
S 11. FESEM images of cross linked polymers containing high amounts of Pt prepared by distillation and extraction method in different magnifications.



S 12. Nitrogen physisorption isotherms of extraction derived CeO_2/Pt composite before/after pyrolysis at 1200 °C in argon.



S 14. Catalytic stability of D-2.8-1350-O composite in catalytic cycles of the temperature programmed methane oxidation.



S 13. Water vapour physisorption measurements of distillation derived ceramics D-2.8 pyrolysed at 1200-1500 °C.