Electronic Supplementary Information (ESI)

## POSS containing hyperbranched polymers as precursors for magnetic Co@C-SiOx ceramic nanocomposites with good sinterresistant properties and high ceramic yield

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Scheme S1. The synthetic pathway of HP1-Co and HP2-Co.



Figure S1. HRTEM images of the nanoparticles obtained through pyrolysis of HP1-Co.



Figure S2. HRTEM images of the nanoparticles obtained through pyrolysis of HP2-Co.



**Figure S3.** Particle size distributions of the nanoparticles obtained from pyrolysis of **HP1-Co** (a, b) and **HP2-Co** (c, d) at 700  $^{\circ}$ C (a, c) and 900  $^{\circ}$ C (b, d).



**Figure S4.** SEM-EDX spectra of the materials obtained from pyrolysis of polymers **HP1-Co** (a, b) and **HP2-Co** (c, d) at 700  $^{\circ}$ C (a, c) and 900  $^{\circ}$ C (b, d).



**Figure S5.** TEM-EDX spectra of the materials obtained from pyrolysis of polymers **HP1-Co** and **HP2-Co** at 700 °C.



Figure S6. <sup>1</sup>H NMR spectrum of 1 in CDCl<sub>3</sub>.



Figure S7. <sup>13</sup>C NMR spectrum of 1.



Figure S9. <sup>13</sup>C NMR spectrum of 2.



Figure S10. <sup>1</sup>H NMR spectrum of HP1 in CDCl<sub>3</sub>.



Figure S11. <sup>13</sup>C NMR spectrum of HP1 in CDCl<sub>3</sub>.



Figure S12. <sup>1</sup>H NMR spectrum of HP2 in CDCl<sub>3</sub>.



Figure S13. <sup>13</sup>C NMR spectrum of HP2 in CDCl<sub>3</sub>.