

## Supporting information

### Preparation and characterization of HfOC/SiOC Composite Powders and Fibermats via the Polymer Pyrolysis Route

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Table S1: Crosslink to pyrolysis yield of HfOC/SiOC particles and fibermats pyrolyzed at different temperatures.

Samples	Yield at 800 °C	Yield at 1000 °C	Yield at 1200 °C
HfOC/SiOC particles (wt. %)	77.6	77.6	74.2
HfOC/SiOC fibermat (wt. %)	22.7	20.3	18.5
HfOC/SiOC fibermat (area %)	29.2	29.3	26.5

Table S2: Oxidation mass loss of ceramic fibermat samples.

Sample Name	Mass loss for py at 800 °C (wt.%)	Mass loss for py at 1000 °C (wt.%)	Mass loss for py at 1200 °C (wt.%)
SiOC	41	70.6	67.5
HfOC/SiOC	53.5	58.3	55.3

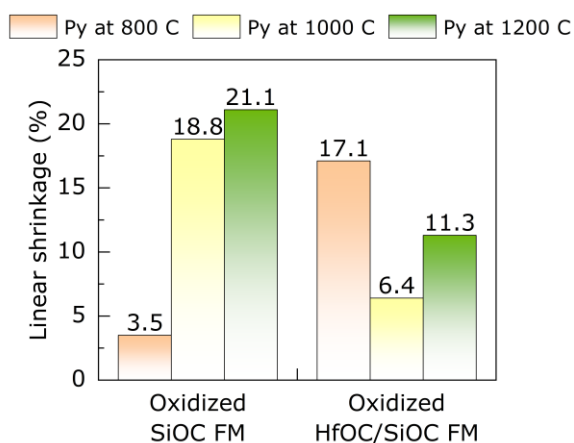


Figure S1: Linear shrinkage (in diameter) analysis for 800 °C oxidization of PVP, SiOC, and HfOC/SiOC fibermats.

Table S3: Thickness of the pre- and post-oxidized HfOC/SiOC fibermats.

HfOC/SiOC sample pyrolyzed at	Pre-oxidization test thickness ( $\mu\text{m}$ )	Post-oxidization test thickness ( $\mu\text{m}$ )	Reduction in thickness (%)
800 °C	220	70	68
1000 °C	140	70	50
1200 °C	100	80	20