Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information

Phenol resin carbonized films with anisotropic dhrinkage driven ordered mesoporous structures

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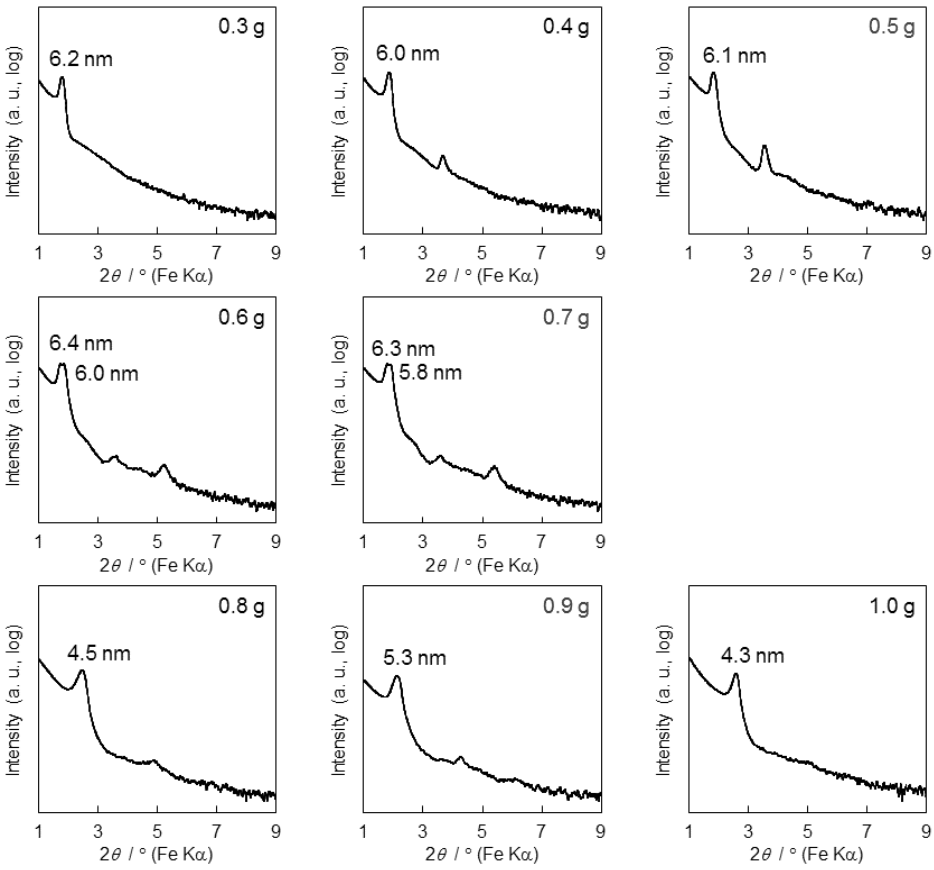

Fig. S1 XRD patterns of phenol resin carbonized (350 °C in N_2 flow) films prepared using different amount (0.3−1.0 g) of Pluronic F127, which were displayed by log scale to emphasize peaks appeared at higher diffraction angles.

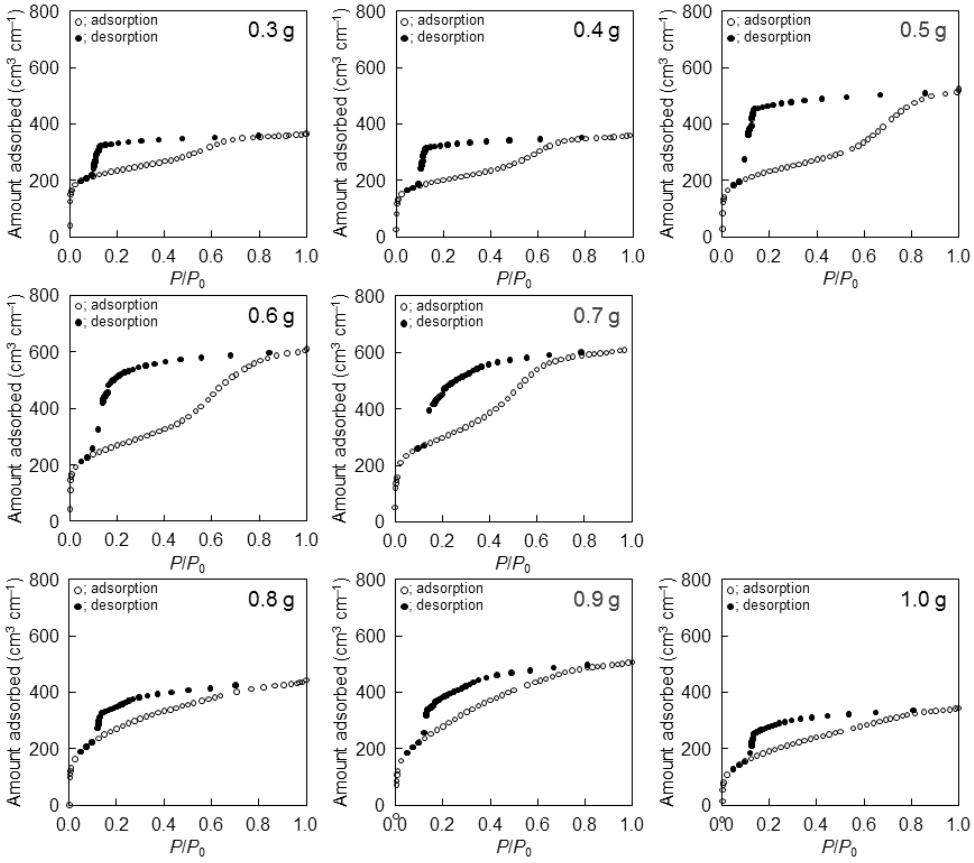

Fig. S2 Kr adsorption-desorption isotherms of phenol resin carbonized (350 °C in N_2 flow) films prepared using different amount (0.3−1.0 g) of Pluronic F127.

Table S1. Porosity of phenol resin carbonized (350 °C in N_2 flow) films prepared using Pluronic F127.

F127 / g	Surface area / m^2 cm^{-3}	Thickness / nm
0.3	1066	125 ± 30
0.4	902	142 ± 50
0.5	1039	118 ± 40
0.6	1208	135 ± 45
0.7	1335	145
0.8	1449	144
0.9	1541	138
1.0	1109	158

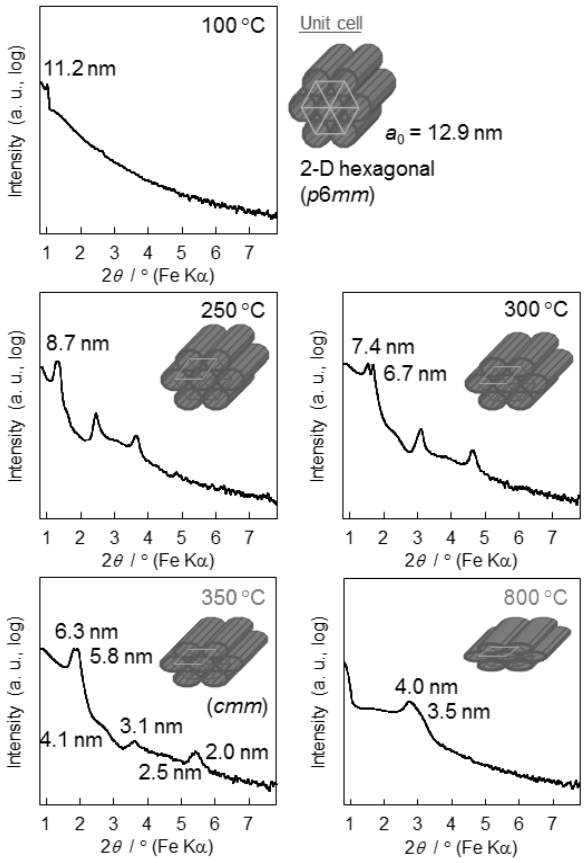

Fig. S3 XRD patterns of phenol resin films prepared using 0.7 g of Pluronic F127 after (a) polymerization at 100 °C followed by carbonization at (b) 250 °C, (c) 300 °C, and (d) 350 °C in N_2 flow, with schematic illustration of structural change of 2-D hexagonal (*p*6*mm*) into orthorhombic (*cmm*) structures during anisotropic shrinkage.

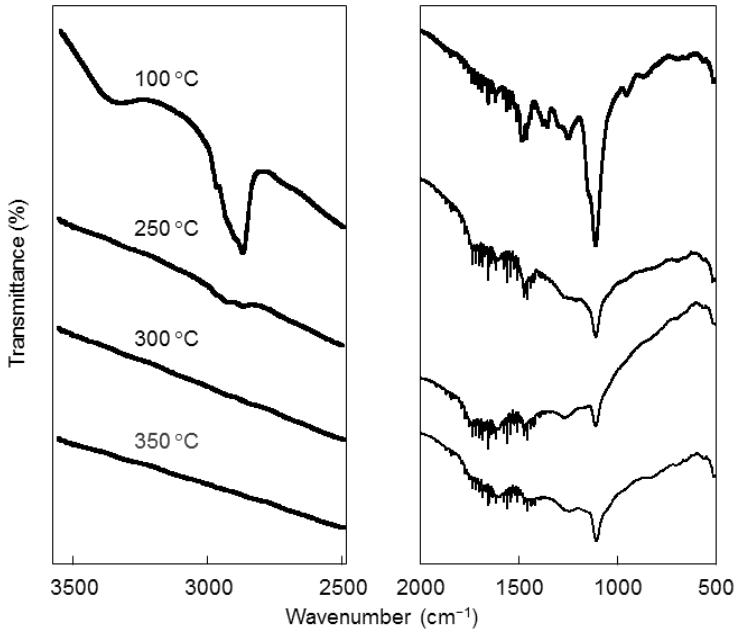

Fig. S4 FT-IR spectra of phenol resin films prepared using 0.7 g of Pluronic F127 after polymerization at 100 °C followed by carbonization at 250−350 °C in N_2 flow.

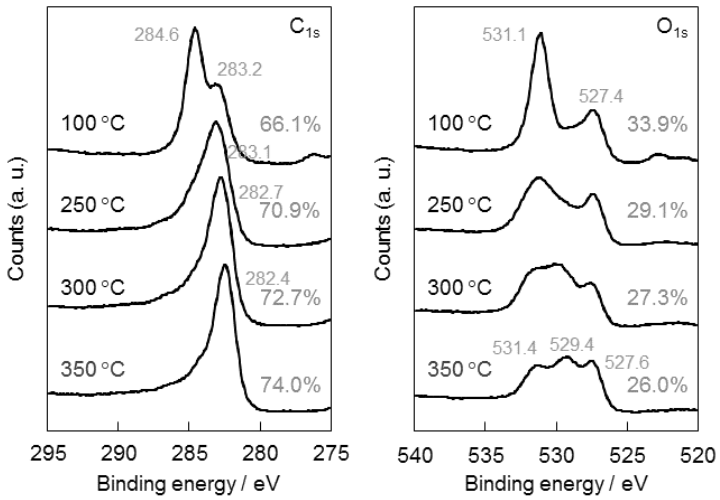

Fig. S5 C1s and O1s XPS spectra of phenol resin films prepared using 0.7 g of Pluronic F127 after polymerization at 100 °C followed by carbonization at 250−350 °C in N_2 flow.