SUPPORTING INFORMATION FOR

Diblock Copolymer Core-Shell Nanoparticles as Template for Mesoporous Carbons: Independent Tuning of Pore Size and Pore Wall Thickness

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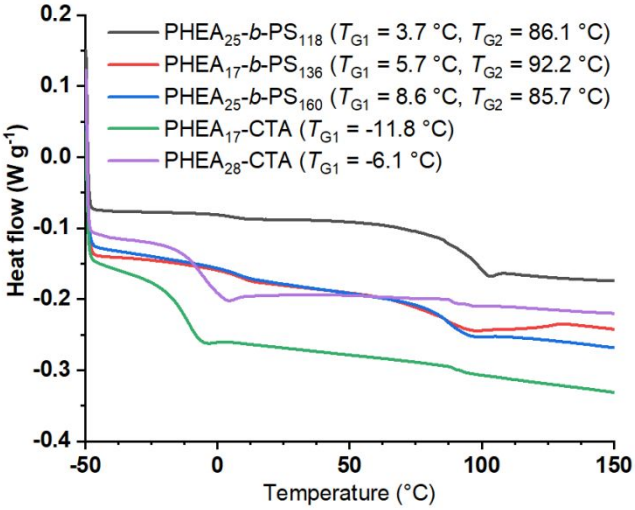


Figure S1. DSC curves of different PHEA-*b*-PS based copolymers with different block lengths. Comparison with PHEA macrophotoinitiators.

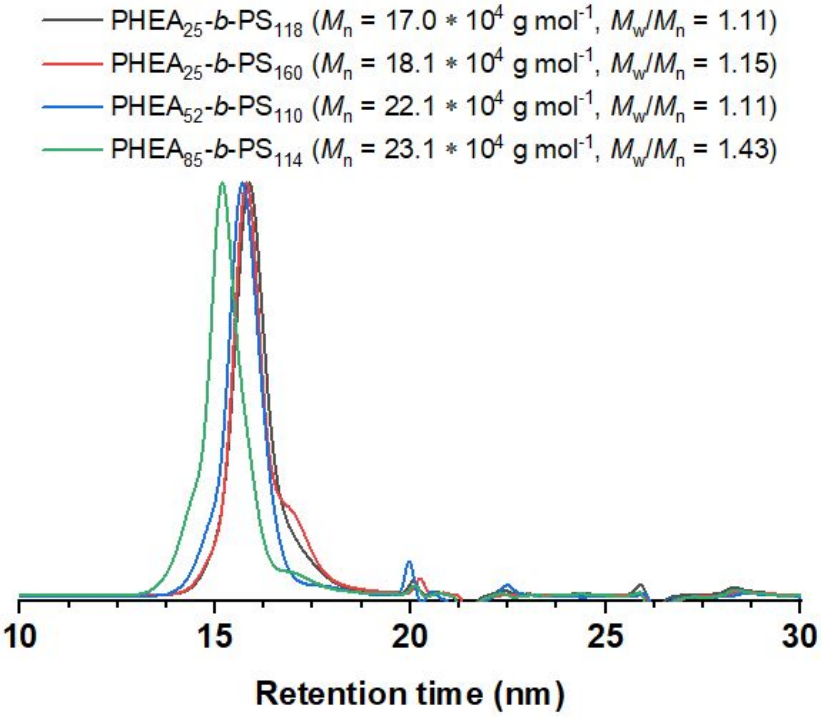


Figure S2. Size exclusion chromatography plots in DMF at 50 °C (Refractive index detector) of PHEA-*b*-PS diblock copolymers synthesized via photomediated RAFT polymerization in dispersion.

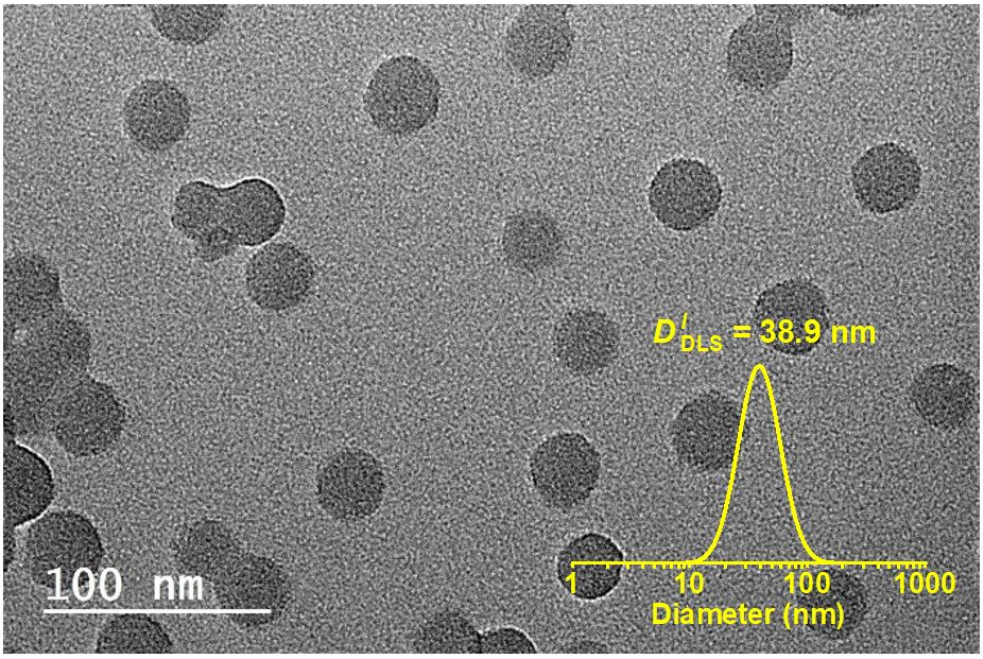


Figure S3. TEM image of $PHEA_{25}$-*b*-PS_{118} copolymer after a 12-month storage (inset: number size distributions by DLS).

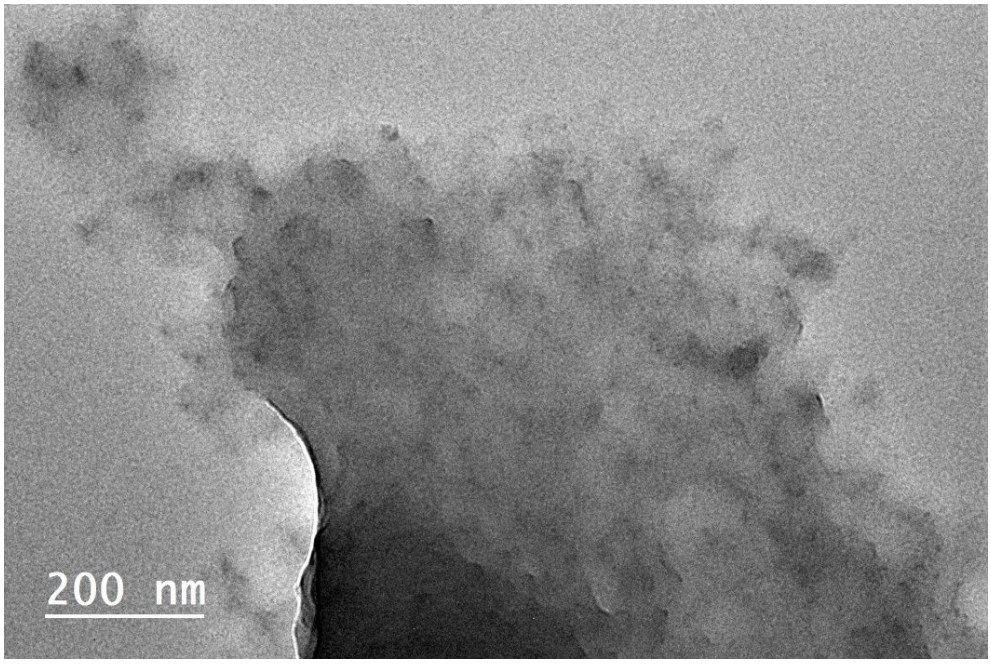


Figure S4. TEM image of a homogeneous phenolic resin/template ($PHEA_{25}$-*b*-PS_{118} copolymer based template) composite, after thermal consolidation step (60 °C), before thermal annealing step.

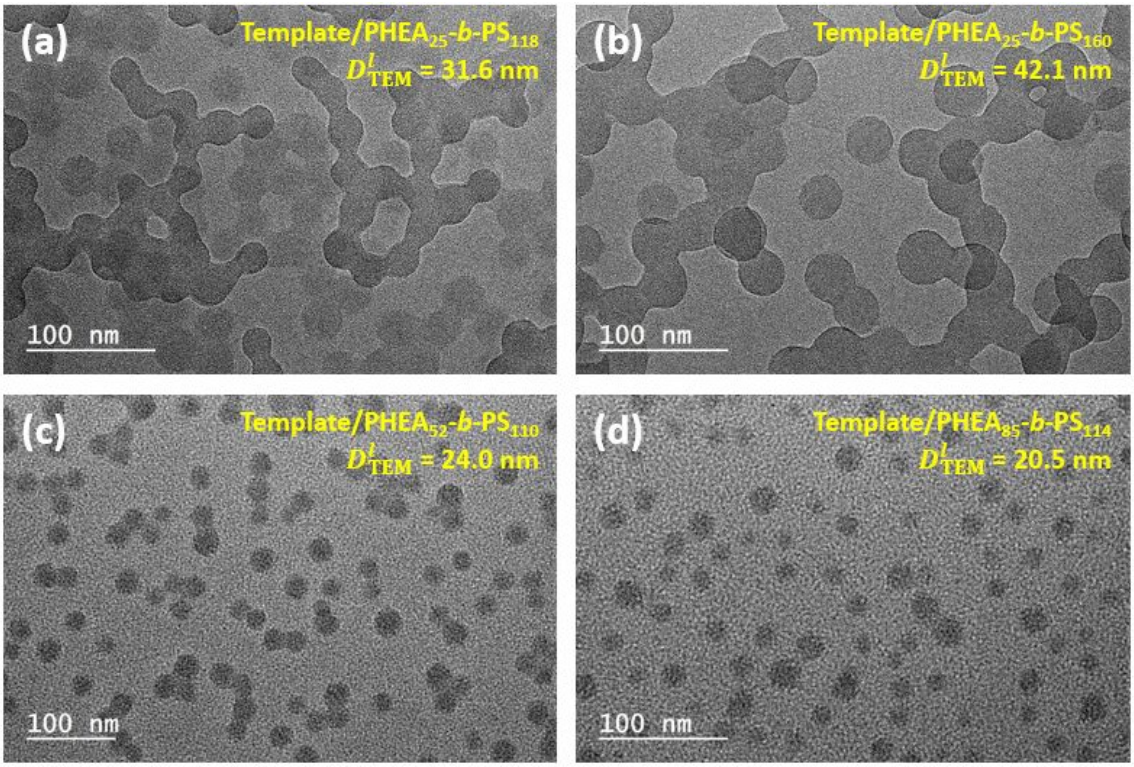


Figure S5. TEM images of nanoparticles used as templates in mesoporous carbon synthesis based on (*a*) $PHEA_{25}$-*b*-PS_{118}, (*b*) $PHEA_{25}$-*b*-PS_{160}, (*c*) $PHEA_{52}$-*b*-PS_{110} and (*d*) $PHEA_{85}$-*b*-PS_{114}.

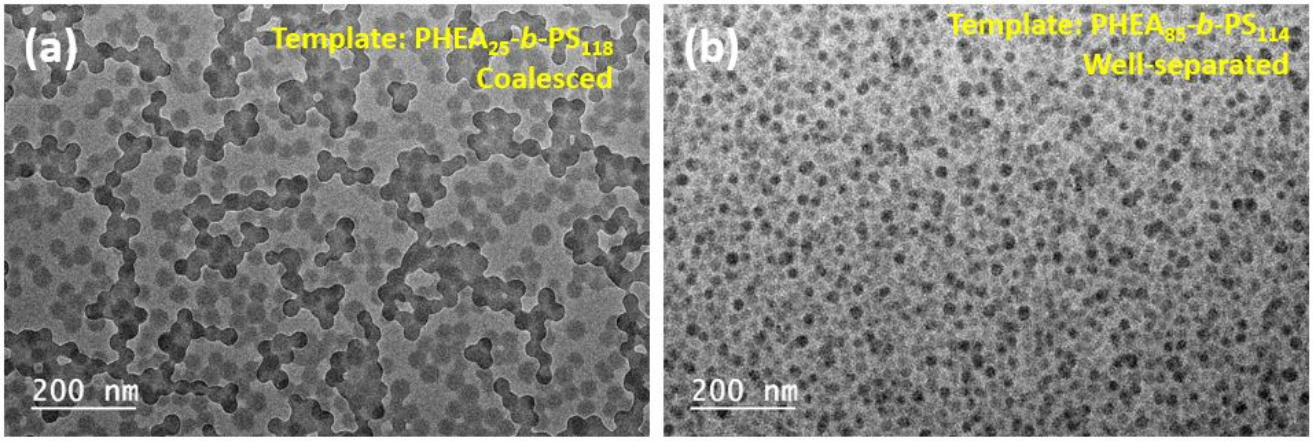


Figure S6. Comparision between TEM images of $PHEA_{25}$-*b*-PS_{118} and $PHEA_{85}$-*b*-PS_{114} latex. *Left*: $PHEA_{25}$-*b*-PS_{118} particles (*a*) show a physical contact between the PS cores because the PHEA layer thickness provided by 25 HEA units is very limited. By contrast, drying of a TEM grids where $PHEA_{85}$-*b*-PS_{114} latex was cast yields an array of disordered but clearly visible spherical PS cores. Because 85 HEA units create a more effective stabilizing layer, the distances between PS cores is increased.

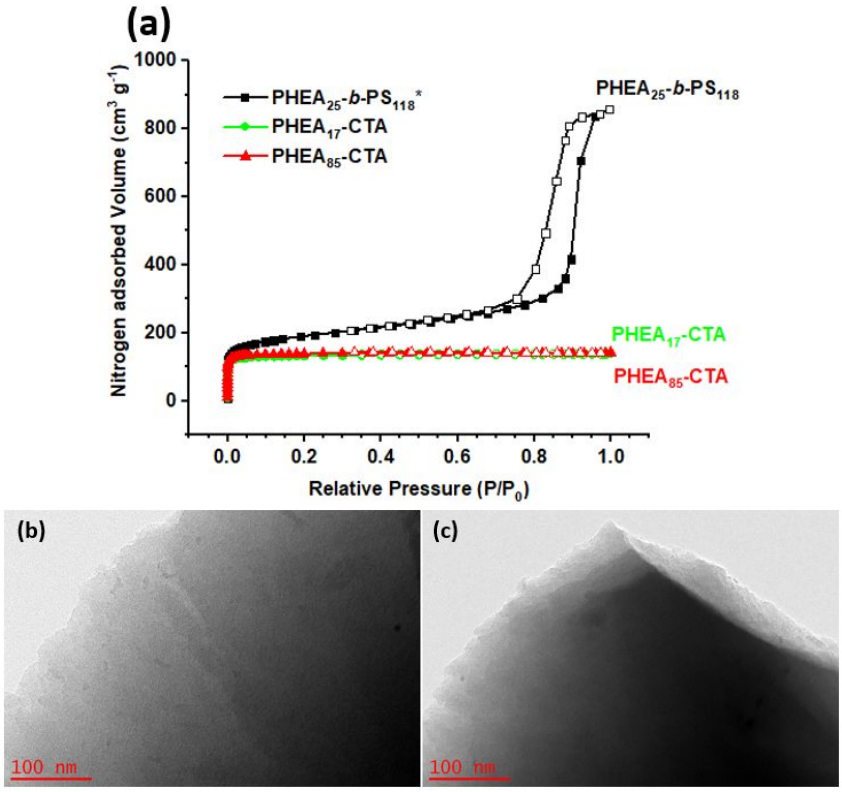
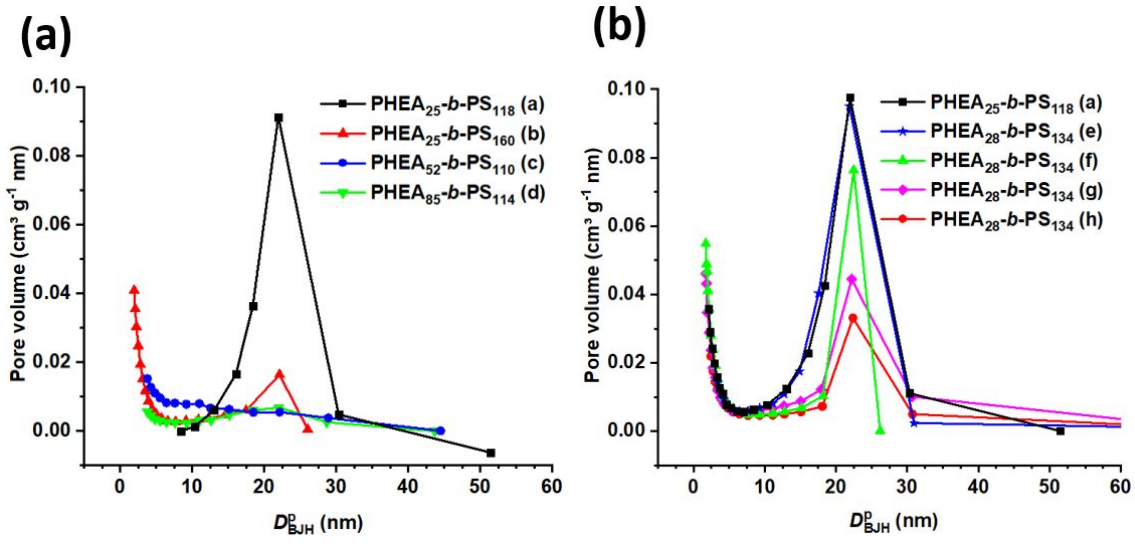


Figure S7. Nitrogen adsorption/desorption isotherms (a) and TEM images of carbon materials based on homopolymer $PHEA_{17}$-CTA (b) and $PHEA_{85}$-CTA (c).



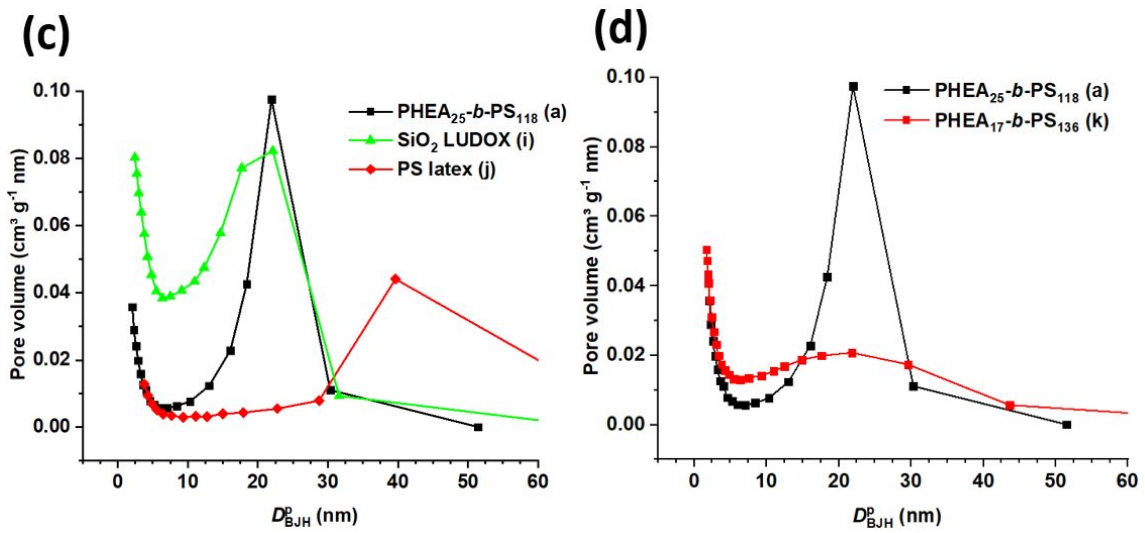


Figure S8. Pore size distributions by the BJH method of carbon materials. Effet of template size (a), template concentrations (b), templates structure (c), and template morphology (d).

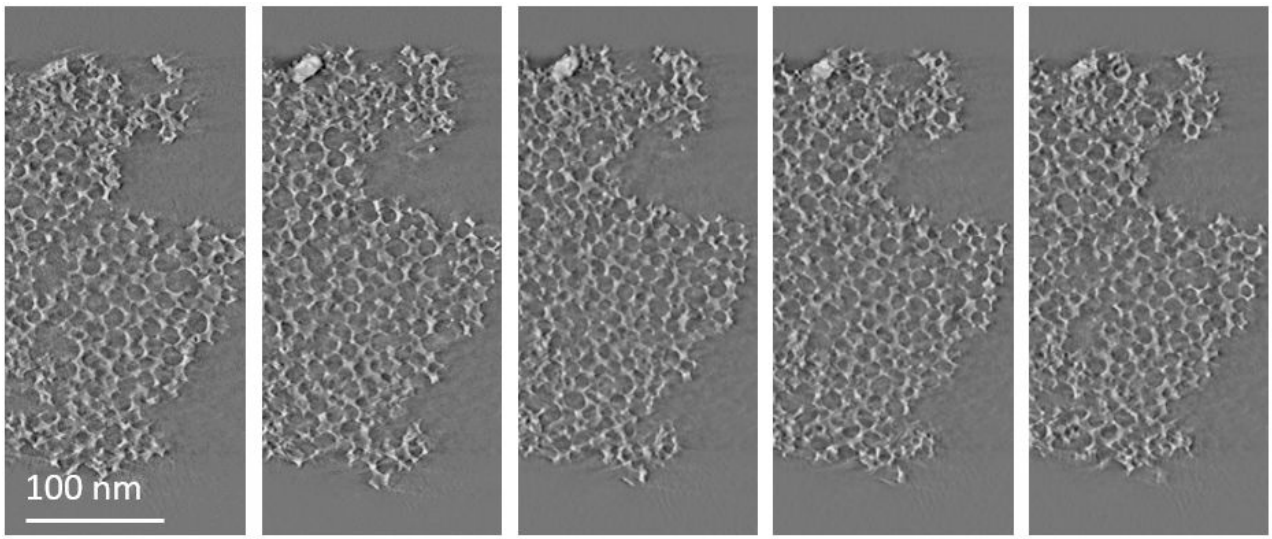


Figure S9. Graphical slices of tomography study of mesoporous carbon templated with PS nanolatex.

II. Supplementary Table

Table S1 Textural and structural properties of carbon materials synthesized using PHEA homopolymer with differents lenghts

Template	Run	D^{l}_{TEM} nm	S_{BET} $m^2\ g^{-1}$	V_{T} $cm^3\ g^{-1}$	V_{micro} $cm^3\ g^{-1}$	V_{meso} $cm^3\ g^{-1}$	D^{p}_{BJH} nm	D^{p}_{TEM} nm
$PHEA_{25}$-*b*-PS_{118} (sphere)	***a***	**31.6**	**691**	**1.30**	**0.29**	**1.01**	**22**	**22**
$PHEA_{17}$-CTA	*l*	-	534	0.21	0.21	0.00	-	-
$PHEA_{85}$-CTA	*m*	-	557	0.22	0.22	0.00	-	-