

Supporting Information

Liang Cao and Michal Kruk "Grafting of Polymer Brushes from Nanopore Surface via Atom Transfer Radical Polymerization with Activators Regenerated by Electron Transfer"

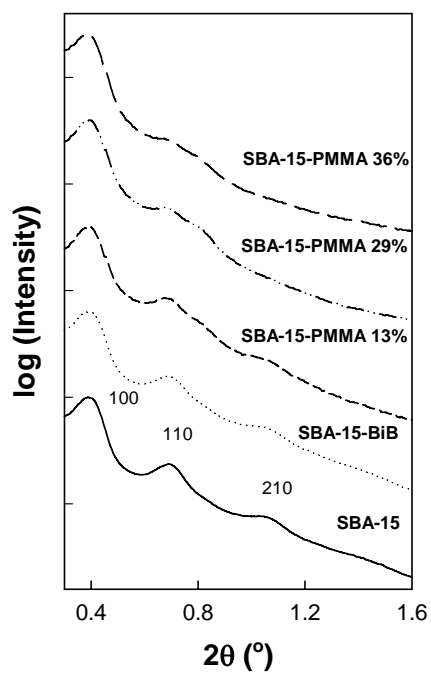
Supporting Table 1. Structural properties of materials.^a

SBA-15 support, grafted polymer and its weight %	S_{BET} ($\text{m}^2 \text{g}^{-1}$)	V_t ($\text{cm}^3 \text{g}^{-1}$)	w_{BJH} (nm)
SBA-15(22 nm) ^b	333	1.32	30.2
SBA-15(22 nm)-BiB	235	1.09	25.0
SBA-15(22 nm)-PMMA 13%	136	0.66	23.5
SBA-15(22 nm)-PMMA 29%	101	0.40	21.5
SBA-15(22 nm)-PMMA 36%	64	0.23	18.2
SBA-15(22 nm)-PS 14%	117	0.60	23.3
SBA-15(22 nm)-PS 19%	103	0.48	21.1
SBA-15(14 nm) ^b	582	1.31	14.3
SBA-15(14 nm)-BiB	309	0.82	12.4
SBA-15(14 nm)-PMMA 11%	192	0.49	11.1
SBA-15(14 nm)-PMMA 22%	82	0.17	8.4
SBA-15(14 nm)-PMMA 34%	~1	0.01	f^c

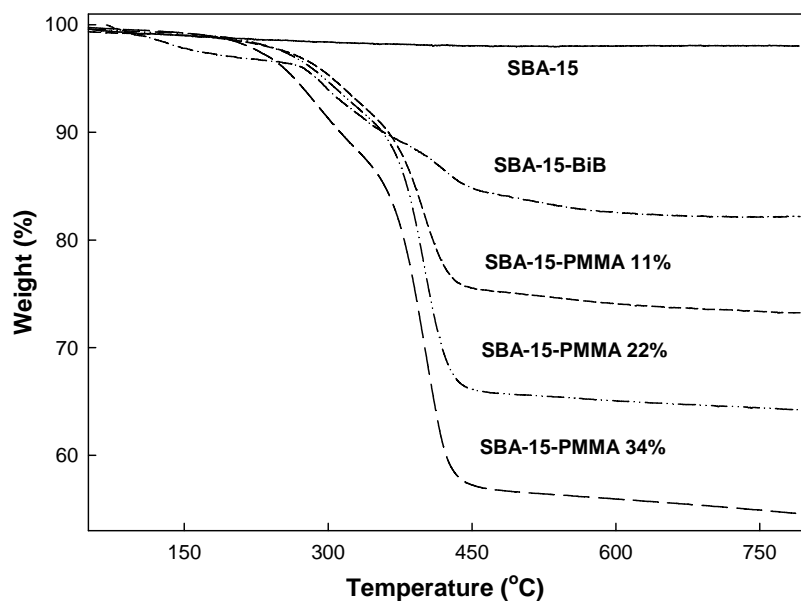
^a Notation: S_{BET} , BET specific surface area; V_t , total pore volume; w_{BJH} , BJH pore diameter. ^b Pore diameter evaluated using equation 1 from Cao, L.; Man, T.; Kruk, M. *Chem. Mater.* **2009**, *21*, 1144-1153.; thus obtained pore diameter is expected to accurately reflect the pore diameter of the SBA-15 silica support; the considered equation is not applicable for surface-modified SBA-15, therefore the pore diameter for these materials was assessed using the BJH method, which is expected to reliably assess the shape and reasonably represent the width of the pore size distribution, but which is known to overestimate the pore diameter in the considered pore size range. ^c Could not be estimated because of lack of pore accessibility.



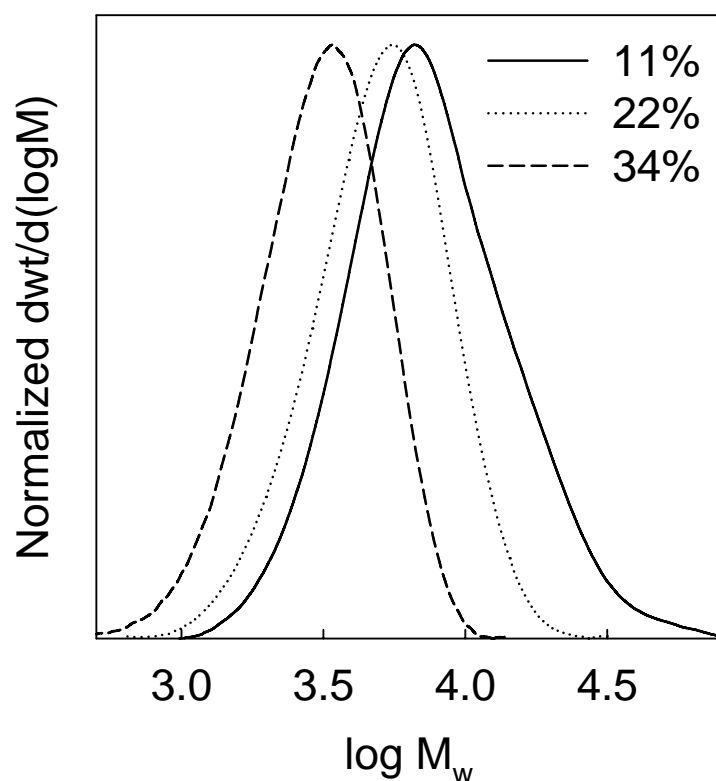
Supporting Figure S1. (left) SBA-15-PS synthesized via ARGET ATRP; (right) SBA-15-PS synthesized via normal ATRP. The preparation of both samples involved the same purification procedure including the washing with THF, acetone and methanol, and drying in a vacuum oven.



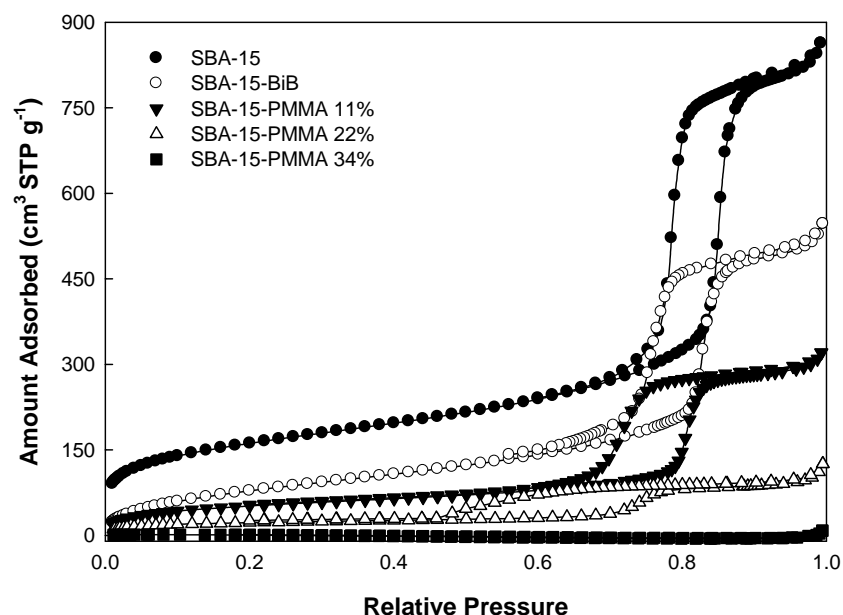
Supporting Figure S2. Small-angle X-ray scattering patterns for SBA-15 silica (22 nm pore diameter) before and after attachment of initiation sites and polymerization of methyl methacrylate (loading of PMMA in the composite is indicated in wt.%).



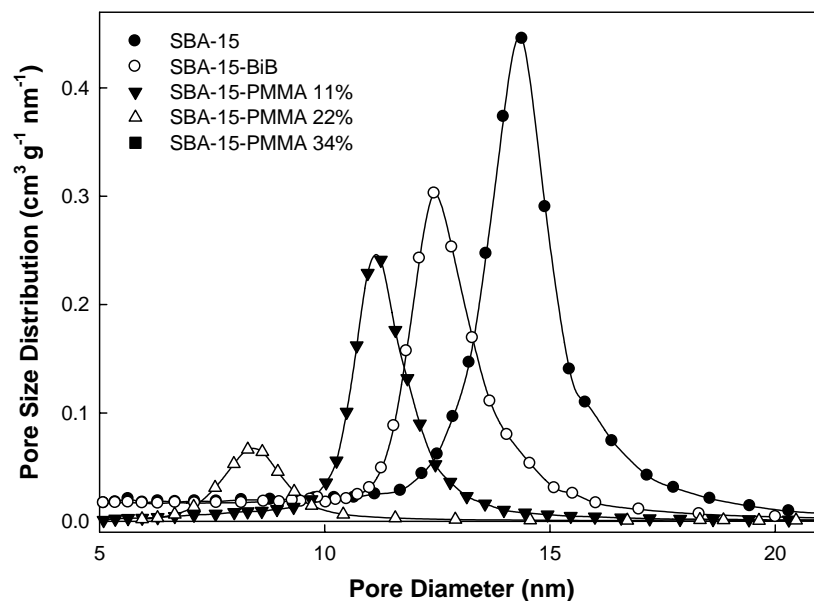
Supporting Figure S3. Weight change patterns for SBA-15 silica (14 nm pore diameter) before and after attachment of initiation sites and polymerization of methyl methacrylate (loading of PMMA in the composite is indicated in wt.%).



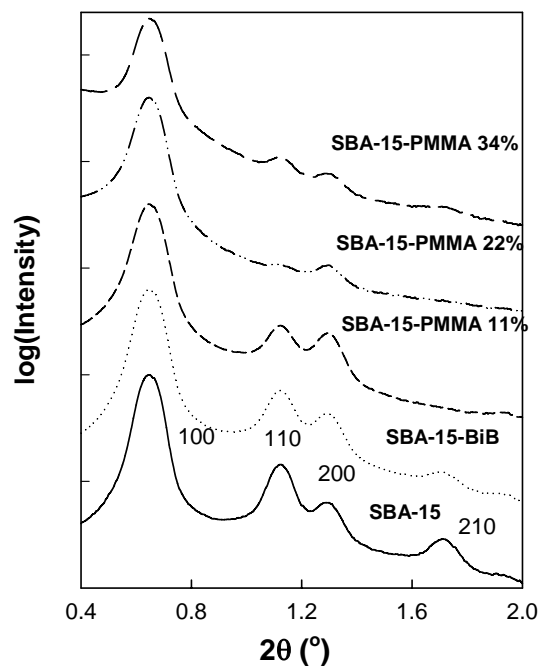
Supporting Figure S4. Gel permeation chromatography (GPC) molecular weight distributions for poly(methyl methacrylate) cleaved from the surface of SBA-15/PMMA composites (loading of PMMA in the composites is indicated in wt.%).



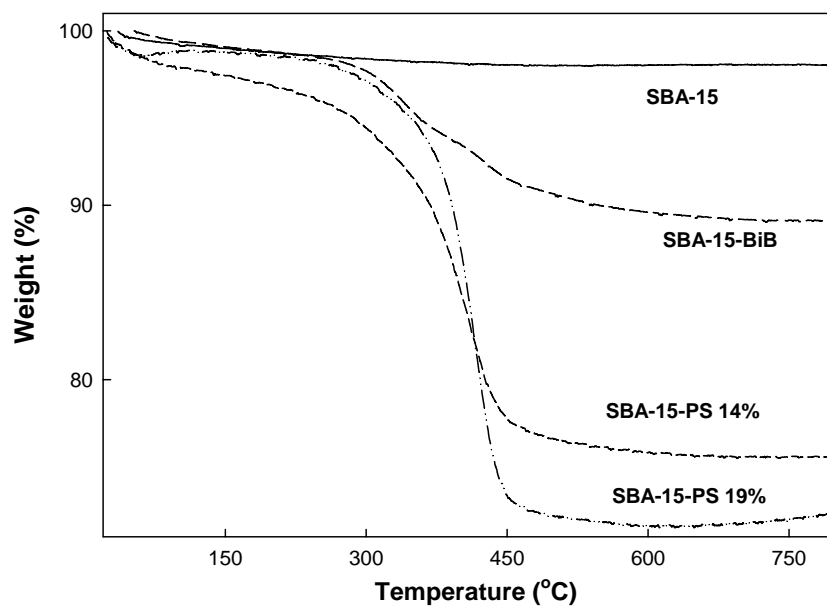
Supporting Figure S5. Nitrogen adsorption isotherms for SBA-15 silica (14 nm pore diameter) before and after attachment of initiation sites and polymerization of methyl methacrylate (loading of PMMA in the composite is indicated in wt.%).



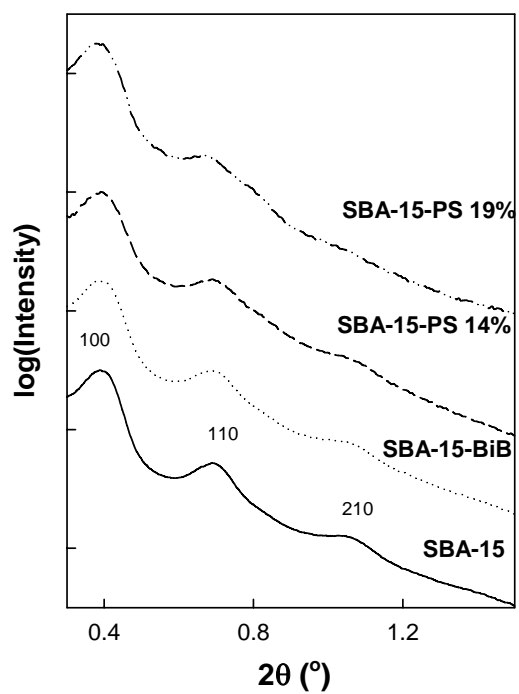
Supporting Figure S6. Pore size distributions (PSDs) for SBA-15 silica (14 nm pore diameter) before and after attachment of initiation sites and polymerization of methyl methacrylate (loading of PMMA in the composite is indicated in wt.%). Note that PSDs were calculated using BJH method from adsorption branches of isotherms and are expected to overestimate the pore diameter by about 1 nm in the considered pore size range (see Kruk, M.; Cao, L., *Langmuir* **2007**, *23*, 7247-7254).



Supporting Figure S7. Small-angle X-ray scattering patterns for SBA-15 silica (14 nm pore diameter) before and after attachment of initiation sites and polymerization of methyl methacrylate (loading of PMMA in the composite is indicated in wt.%).



Supporting Figure S8. Weight change patterns for SBA-15 silica (22 nm pore diameter) before and after attachment of initiation sites and polymerization of styrene (loading of PS in the composite is indicated in wt.%).



Supporting Figure S9. Small-angle X-ray scattering patterns for SBA-15 silica (22 nm pore diameter) before and after attachment of initiation sites and polymerization of styrene (loading of PS in the composite is indicated in wt.%).