A decade of innovation and progress in understanding the morphology and structure of heterogeneous polymers into rigid confinement

Salim Ok[1,*,$], Marylène Vayer[2,$], Christophe Sinturel[2,$]

[1]Petroleum Research Center, Kuwait Institute for Scientific Research, P.O. Box 24885 Safat, 13109, Kuwait

[2]Interfaces, Confinement, Matériaux et Nanostructures (ICMN), CNRS-Université d'Orléans, UMR 7374, 1b, Rue de la Férollerie, C.S. 40059, 45071 Orléans Cedex 2, France

[*]Correspondence, E-mail: sok@uos.de

[$]Equal Contributors

Contents

Table S1

References	Title	Hard templates	Infiltration methods	polymer blends in AAO	block copolymer in AAO	crystallization in BCP in AOO	Other themes covered
1	Supramolecular organization of polymeric materials in nanoporous hard templates	+++	+++	---	++	++	Self-Assembly of Single-Component Materials in Nanopores Phase Separation in Nanoporous Hard Templates Multilayer Nanotubes by Layer-by-Layer Deposition
2	The interplay of symmetries of block polymers and confining geometries Introduction to block polymers	---	---	---	++	---	One-dimensional confinement Three-dimensional confinement
3	Where bio meets nano: The many uses for nanoporous aluminum oxide in biotechnology	++	---	---	---	---	PAO in microbiology Surface modification and functionalization of PAO
4	Mediating polymer crystal orientation using nano templates from block copolymer microdomains and anodic aluminum oxide nanochannels	---	---	---	++	+++	Crystal orientation in 1-D confinement template Crystal orientation in 2-D confinement templated by a block copolymer nanostructure
5	Self-assembly of diblock copolymers under confinement	---	---	---	+++	---	Morphologies in 3D-confinement
6	Confinement effects on polymer crystallization: from droplets to alumina nanopores	---	---	---	---	+++	Crystallization of droplet dispersions Crystallization of confined components within polymer blends Block copolymer crystallization Crystallization within nanostructures formed from solutions
7	Confined crystallization of polymers within anodic aluminum oxide templates	---	---	---	---	+++	X-Ray Diffraction: Chain Orientation within Nanopores and Polymorphism Crystallization Kinetics
8	Soft matter in hard confinement: phase transition thermodynamics, structure, texture,	---	---	---	---	++	Equilibrium phenomena Non-equilibrium phenomena

	diffusion, and flow in Nanoporous media						
9	Crystallization of polymer chains confined in nanodomains	---	---	---	---	++	Confined crystallization of crystalline–amorphous diblock copolymers Sequential crystallization of crystalline–crystalline diblock copolymers
10	Confined crystallization of polymeric materials	---	---	---	---	++	Crystallization of droplet dispersion Crystallization within ultrathin and nanolayered films Crystallization within nanostructures formed from solutions Crystallization of confined components within polymer blends Block copolymer crystallization
11	A review on the progress of polymer nanostructures with modulated morphologies and properties, using nanoporous AAO templates	+++	+++	---	++	++	Polymer nanostructuring and nanopatterning Confinement effects on the physical processes of polymers Modulated properties of nanostructured polymers from AAO templates: Examples of applications
12	Polymer nanostructures using nanoporous templates	--	+++	++	++	--	Instability Studies of Polymer Nanomaterials Prepared by the Template Method
13	Crystallization of polymers	----	---	---	---	+++	Confined Crystallization in Block Copolymer in Confined Space Confined Crystallization in electrospun fibers Confined Crystallization in some other system
14	Molecular self-assembly of one-dimensional polymer nanostructures in nanopores of anodic alumina oxide templates	---	++	++	---	+++	Amorphous homopolymers in nanopores Semicrystalline homopolymers in nanopores
15	Polymer dynamics under confinement	---	---	---	++	---	Neutron methods Polymer dynamics in model nanoporous systems Polymer dynamics in nanocomposites
16	Advanced AAO templating of nanostructured stimuli-responsive polymers: hype or hope?	+++	---	+++	---	---	Nature Designed Smart Nanostructures Stimuli-Responsive Materials

If the theme is fully covered (+++), partially covered (++) or not covered (---). List of the covered others items.

Figure S1

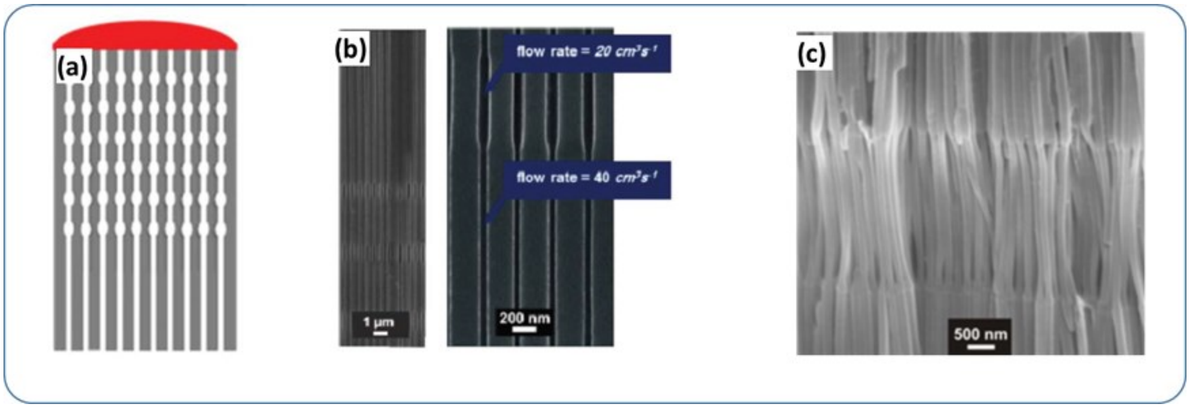

Fig. S1. Graphical illustration (a), SEM side-view image of AAO template with modulated pore diameter (b) and corresponding PMMA nanotubes observed by Raoufi et al. Reproduced from J. Polym. Sci. Part B: Polym. Phys., 52, 1179[17], Copyright 2014, with permission from Wiley.

Figure S2

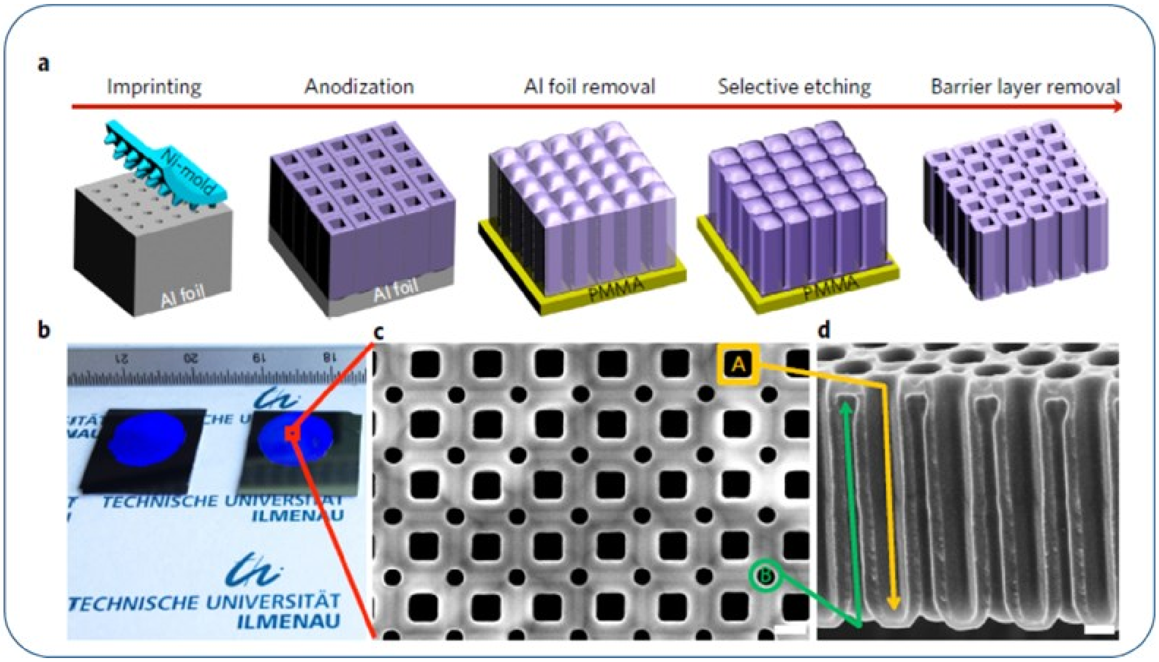

Fig. S2. Schematic of the multi-step process developed by Wen et al. 2017 with a first imprinting step allowing for preparing pores with geometries of a square, circle, four-cross dots arranged in different types of patterns. (a) Photo (b) and SEM top-view (c) and side-view (d) images of binary-pore templates (A-pore, yellow square; B-pore, green circle). Reproduced from Nature Nanotech., 12, 244[18], Copyright 2017, with permission from Nature Publishing Group.

Figure S3

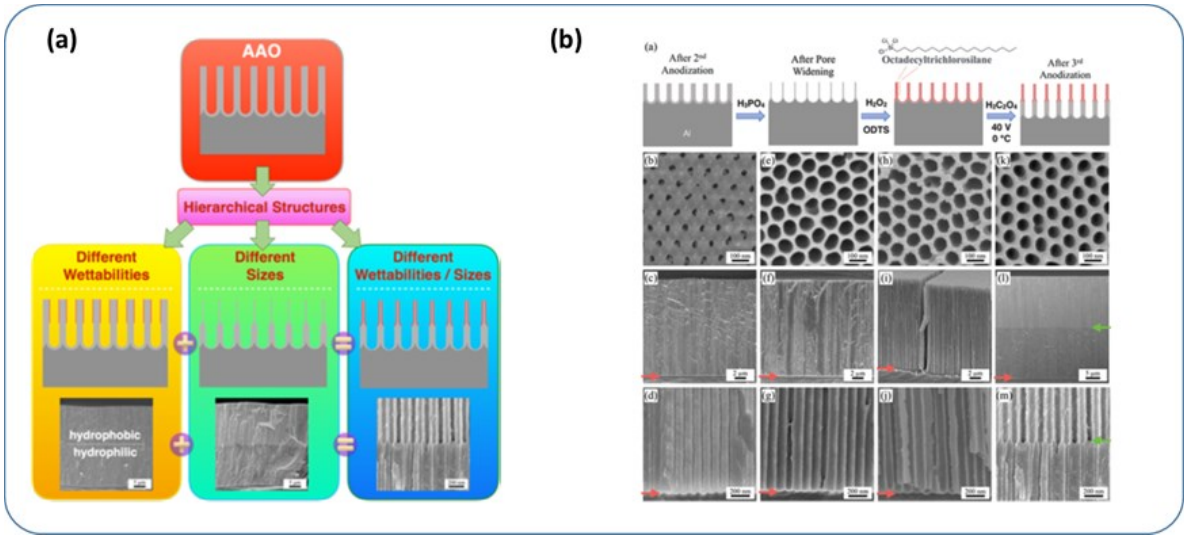

Fig. S3. Schematic of AAO templates with pores exhibiting simultaneously different sizes and surface properties (a) Illustration with corresponding SEM images (b). Reproduced from J. Phys. Chem. C, 123, 14540[19], Copyright 2019, with permission from the American Chemical Society.

Figure S4

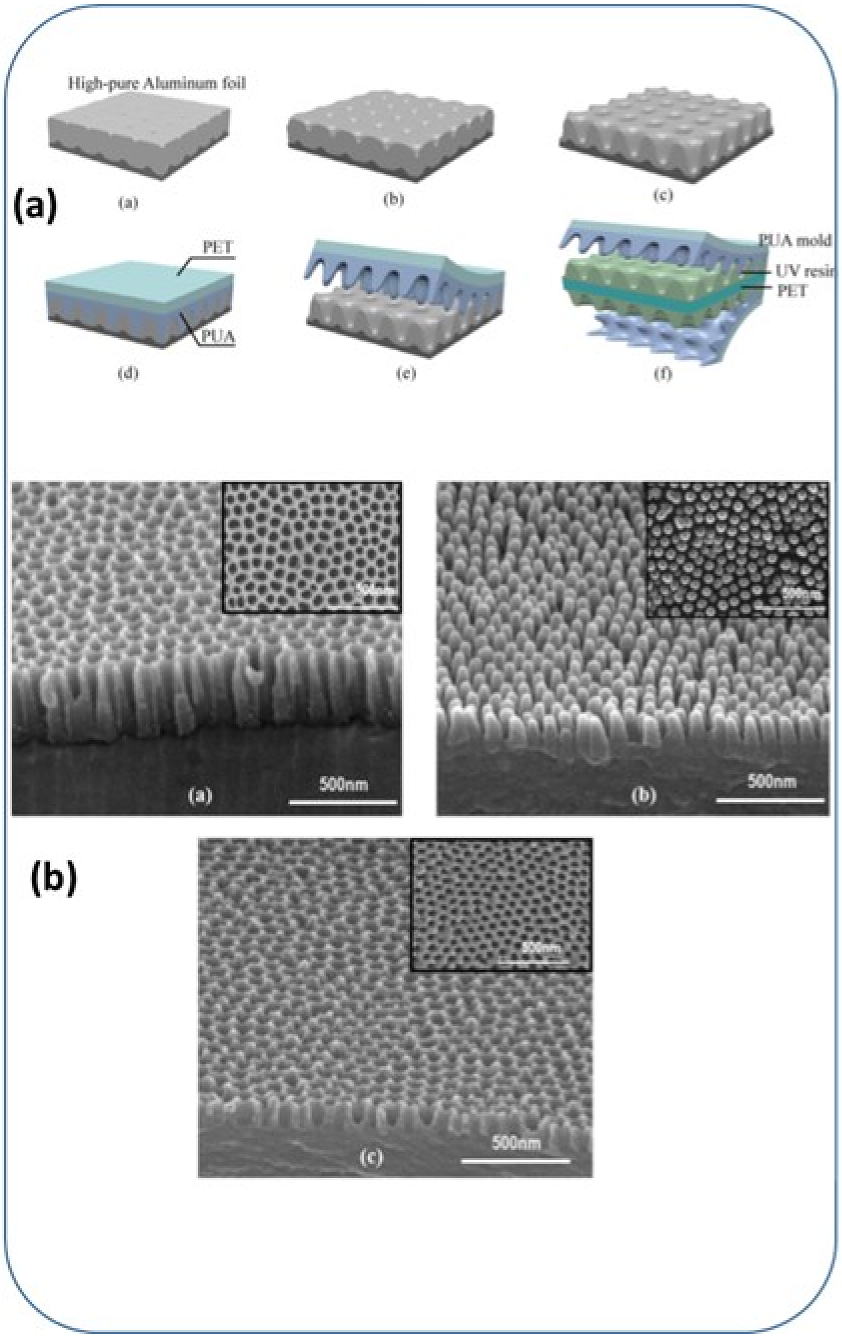

Fig. S4. Schematic of the fabrication process developed by Zhang et al. (a), SEM images of the AAO membranes, PUA mold, and UV resin. Reproduced from Optics Exp., 22, 1842[20], Copyright 2014, with permission from the Optical Society.

Figure S5

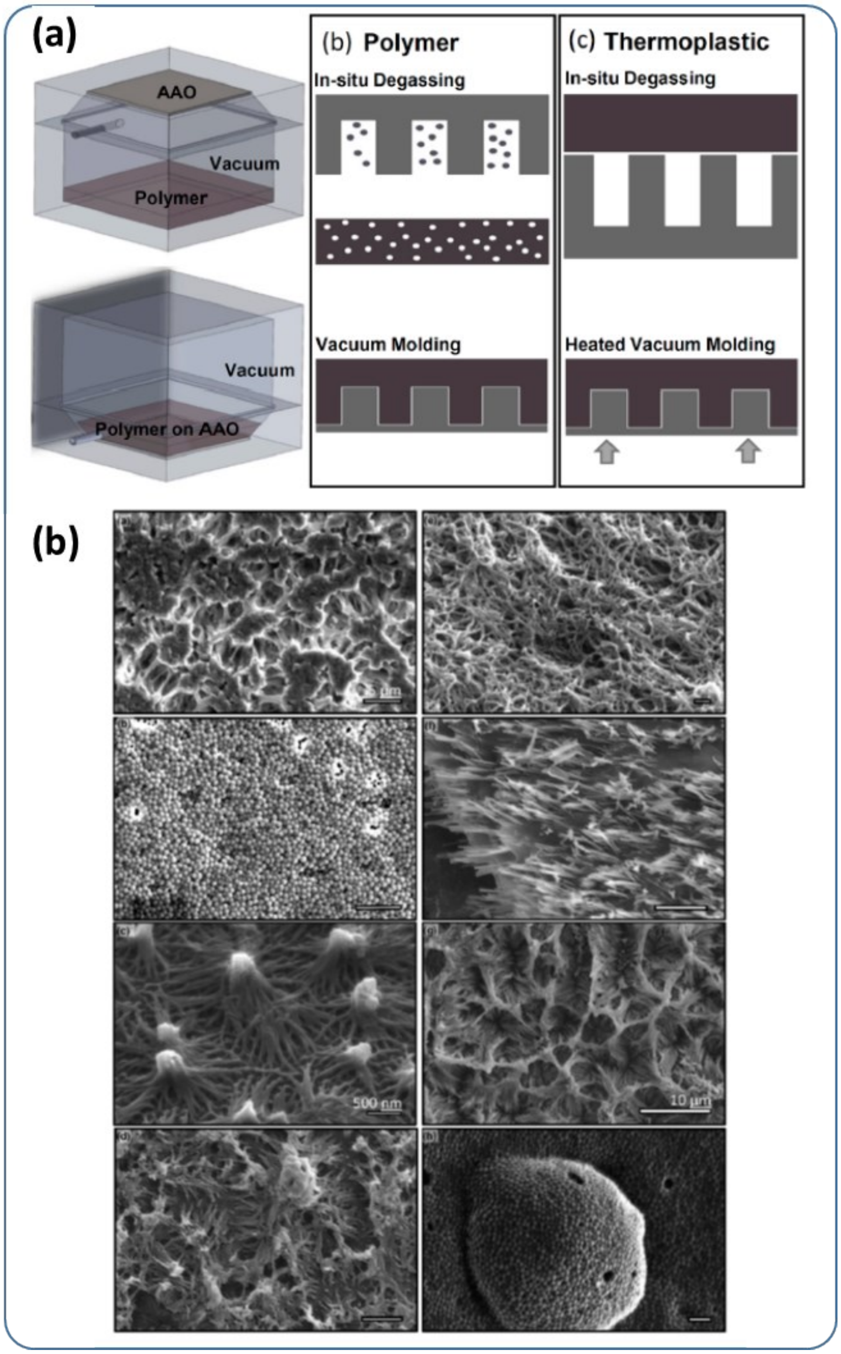

Fig. S5. Schematic of vacuum-assisted molding infiltration method (a) SEM top-views images of different polymers (b).

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