Supplementary Information

Vapor phase infiltration of polymeric materials for advanced nanofabrication

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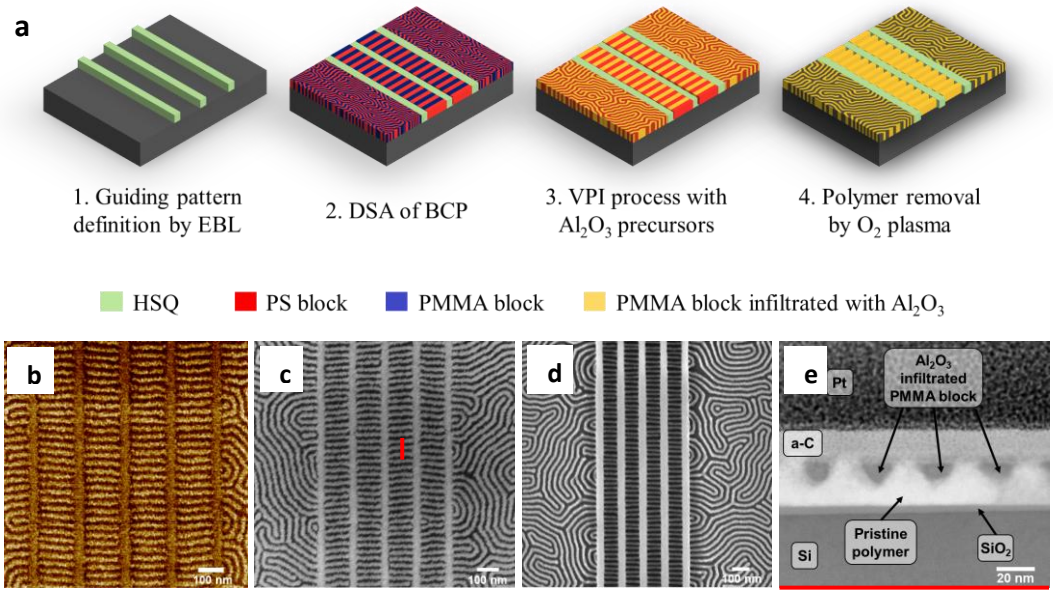

Figure S1. a) Process flow for the fabrication of horizontally aligned Al_2O_3 nanowires using lamellar PS-b-PMMA BCPs and the VPI process. b) AFM phase image of the BCPs after DSA, showing the polymer domains aligned perpendicular to the vertical guiding paterns. c) SEM image of the aligned BCP after alumina infiltration. d) SEM image of the patterns after O_2 plasma ashing, showing the contrast in line definition compared to the pre-VPI polymer. e) STEM cross-sectional image of the sample in c). The period of the BCP is 30 nm, the scale bar in the top view AFM and SEM images is 100nm, and 20nm for the side view. The red lines are only to illustrate the relative orientation of c) and e).

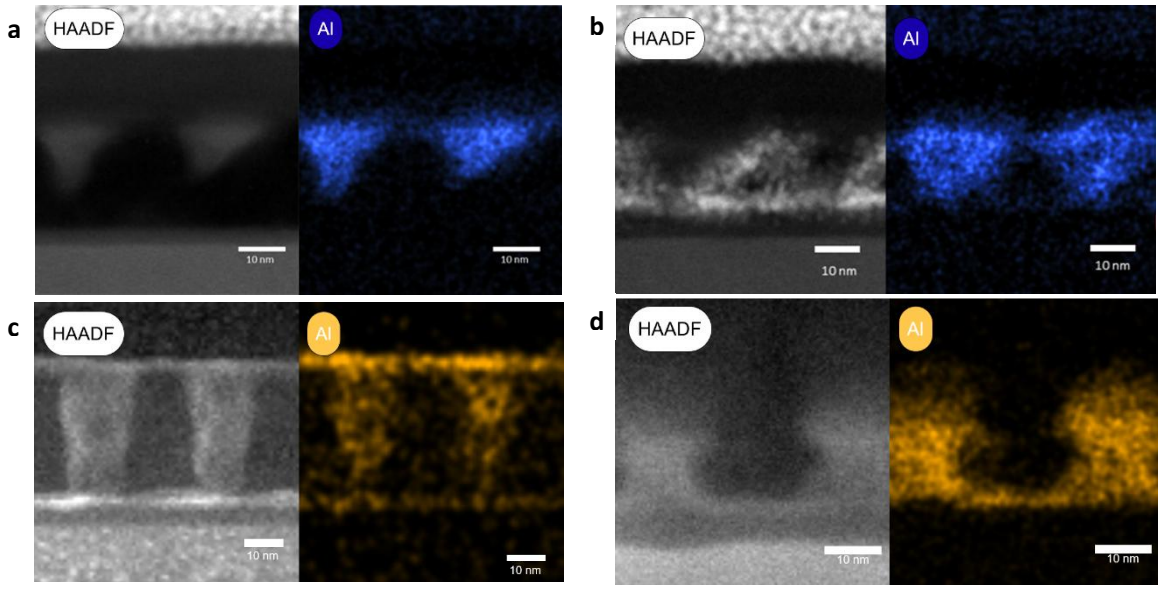

Figure S2. High-angle annular dark field scanning transmission electron microscopy (HAADF-STEM) images with the corresponding aluminum signal from energy dispersive X-ray (EDX) mapping, which shows that infiltration takes place selectively in the PMMA domains. a) PS-b-PMMA film infiltrated with Al_2O_3 at 90ºC. b) The same sample after O_2 plasma ashing. c) PS-b-PMMA film infiltrated with Al_2O_3 at 115ºC. d) The same sample after O_2 plasma ashing. The samples infiltrated at two temperatures show the difference in depth of the alumina penetration in the material.