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Fabricating Stable Superhydrophobic Hierarchical Polyelectrolyte Multilayer Films by Layer-by-Layer Assembly and Nanolithography XIAYUN HUANG, NICOLE ZACHARIA — Recent experiment shows that wetting can be controlled by not only the chemical nature but geometrical structure of the surface also. Even for a hydrophilic surface, it can transit into hydrophobic one when manipulating the roughness of surface. It is also of interest to determine if superhydrophobic surfaces can be created from hydrophilic multilayer films because multilayer is easy to be coated on any place by layer-by-layer assembly. Here, we used water-soluble polycations, PAH (poly(allylamine)), and polyions, SPS (sodium poly(styrene sulfonate)), to form polyelectrolyte multilayers. By nanoimprint lithography and in-situ growth of inorganic patterns in between these polyelectrolyte multilayers, we can include some micro-sized and nano-sized structures for different generations. When controlled introducing micro-sized and nano-sized hierarchical structures into multilayers, we can learn how the surface roughness increasing superhydrophobic properties from geometry view fundamentally.

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