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## Atomic Layer Deposition of Rare Earth Oxides for Surface Energy Control

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Hydrophobic coating is one of practically important surface property engineering methods for many applications, such as non-stick coating of kitchen wares and water-proof coating of electronic gadgets. Polymers that have been widely used for hydrophobic coating materials due to their simple coating process and low fabrication cost, however, they have several inherent disadvantages, such as thermal instability and low mechanical durability. Recently, rare earth oxides (REOs) have been proposed for stable and robust hydrophobic materials. In this work, we utilized atomic layer deposition (ALD) for hydrophobic coating using REOs. Five ALD REOs were developed by using new rare earth element precursors, and surface energy changes of REOs were investigated by using various approaches. Surface energy of the ALD REOs could be precisely controlled by adjusting film thickness. Liquid tweezers and oil-water filtration were demonstrated by tuning surface energy of REOs.