Tailoring ALD coatings on complex geometries for sensing and catalytic applications

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Atomic layer deposition (ALD) utilizes self-limiting surface reactions to construct ultrathin films layer by layer. ALD uniquely offers conformal deposition with precise control of the layer thickness, making it a particularly useful tool to deposit structures with complex geometries, such as spheres, foams, 1D nanostructures, and 3D structures. This leads to improved electrical, mechanical, optical, and chemical properties or even achieving new functionalities. The presentation will discuss some recent results of ALD inorganic and semiconductor coatings on various scaffolds, their advantages and limitations. We will examine how the surface properties affect the coatings and how these coatings impact the performance of sensing and catalytic applications.