

## SHORT ABSTRACT

### **ALD/MLD for novel inorganic-organic hybrid materials: fundamentals and examples of potential applications**

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The combined ALD/MLD (*Atomic/Molecular Layer Deposition*) technique for the deposition of hybrid inorganic-organic materials is strongly emerging as a highly viable technology for the fabrication of fundamentally new types of layer-engineered hybrid thin films, superlattices and nanolaminates. The technique has already been extended to cover a wide multitude of metal and organic components combined into both amorphous and crystalline thin films to provide us with an exciting property palette. In this lecture I will discuss the basics of the ALD/MLD technique, design of new deposition processes, properties of the thus deposited thin films and their possible future applications. Examples of the applications considered include the use of these materials in flexible barrier coatings, thermoelectrics, optoelectronics and Li-ion microbattery.