Bridging physics and AI: the potential of data-driven approaches for advanced energy materials and solar fuels

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Abstract

While physics-based modelling approaches provide strong foundations to understand materials properties, their applicability becomes limited or cumbersome when dealing with complex multi-scale problems. In these cases, data-driven modelling approaches can offer valuable complementary or alternative approaches. In this talk, two practical examples where traditional physics-based modelling faces limitations will be discussed, both within the context of innovative technologies for solar energy conversion into fuels [1,2,3]. For each example, the potential of data-driven and/or AI-guided approaches via, e.g. Deep Learning [4] and Sequential Learning [5] methods, will be discussed.

References

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