**EXCITED STATES IN COMPLEX SYSTEMS THROUGH POLARIZABLE (DENSITY) EMBEDDING**

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In this talk I will introduce and review the polarizable embedding (PE) and polarizable density embedding (PDE) methods [1-6]. These computational models have recently been developed with the aim of enabling calculations of general molecular response properties for large and complex systems. The PE/PDE models build on the concepts from mixed quantum mechanics / molecular mechanics (QM/MM) schemes. They thus represent focused models in which different parts of a large molecular system are described using different levels of approximations. A key concept associated with the PE/PDE models is the introduction of quantum mechanical response theory in combination with polarizable force fields. This allows for calculation and simulation of general molecular properties, *i.e.* properties relevant for optical and magnetic spectroscopies. We will discuss some recent applications of the PE/PDE models aimed at elucidating optical and magnetic properties of both solute-solvent and heterogeneous molecular systems highlighting the general flexibility and accuracy of this computational model.

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