

Quantum Coherence in Chemistry: Tackling the Decoherence Challenge

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A subject of considerable current interest in Chemistry is the possibility of using non-trivial quantum mechanical effects, such as coherence and interference, to enhance molecular function. This possibility is hindered by decoherence processes that prevent matter from fully exhibiting its quantum features. In this talk, I will summarize our progress understanding decoherence in molecular processes, and in particular electronic decoherence. I will discuss the basic mechanisms for electronic coherence loss, methods to quantify the decoherence, and a general theory of decoherence timescales. The talk will conclude with a discussion of the prospects of using lasers to control electronic decoherence in molecules.

References

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