

Reactive encounters in the interstellar medium

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Due to the extreme conditions of very low pressure and temperature, the chemistry of interstellar clouds involves two main classes of chemical processes: gas-phase barrierless reactions involving ions or radicals, and heterogeneous or multiphase processes involving dust grains and icy mantles. In this seminar the first of these two classes will be tackled, with emphasis on modern theoretical treatments ranging from reaction dynamics to chemical kinetics. The central concept of potential-energy surface will be introduced and a real study on the astrochemical process $C + CH^+ \rightarrow C_2^+ + H$ will be illustrated.