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Investigating Collisional and Radiative Processes: Important Datasets for Molecular Dynamics

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According to García & Fuss (2012) and Verkhovtsev et al. (2016), understanding complex processes induced by photons and particles is a significant challenge in today's world. These processes could, for example, result in energy conversion and storage or be critical to the creation of novel light sources (Mason et al. 2014). In recent decades, new experimental techniques and computational chemistry methods have emerged as important tools for studying molecular interactions and dynamics. Furthermore, one can note the present importance of investigating collisional and radiative processes, as well as the associated A&M data (VAMDC, RADAM) (see, for example, Dubernet et al. 2016). Today, the scientific community and industry require access to such molecular data (Marinković et al. 2017). The purpose of this work is to investigate collisional and radiative processes of small molecules and give data for characterization and chemistry of such systems. We will present, discuss, compare, and analyze cross sections and rate coefficients. The results, i.e. the created datasets/databases, can be used for important activities such as modeling, industry, synchrotron experiments, and so on (Giuliani et al. 2014; Milosavljevic et al. 2011).

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