

Photodissociation processes in non-symmetric systems

Tošić, S.,¹  Srećković, V.A.¹  and Vujčić, V.² 

¹*Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia.*

²*Astronomical Observatory, 11060 Belgrade, Serbia.
E-mail: seka@ipb.ac.rs*

New findings in the fields of atmospheric science, astrochemistry etc. have been made possible by recent experimental and theoretical developments. One of the most crucial processes in planetary atmospheres and interstellar media is photodissociation. A brief overview of the fundamental physical processes including photodissociation and photoionization of molecules of astronomical interest as well as new astrophysically relevant molecular species have recently been added to the Leiden VUV cross section database (Hrodmarsson and Dishoeck, 2023). The importance of these data for analyzing observations and measurement results in a variety of fields is also growing (Vujcic et al., 2023). On the other hand, despite of involvement of both ionic and neutral alkali hydride species in a number of astrophysical and astrochemical processes (Sreckovic et al., 2021), only a small amount of theory and observation is known about their spectroscopy, especially when it comes to molecule ions. Here we present results of investigations of the mechanisms of photodissociation processes in non-symmetric systems/configurations involving ions, molecular ions, hydrogen, helium, and alkali atoms. Quantum mechanical analysis of the cross-sections and spectral rate coefficient data has been carried out.

Acknowledgments: This research was supported by the Science Fund of the Republic Serbia [Grant no. 3108/2021, NOVA2LIBS4fusion and Grant No. 7749560, EGWIn]

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