

**International Meeting on Data for Atomic and Molecular
Processes in Plasmas: Advances in Standards and Modelling**

November 12-15, 2024, Palić, Serbia

**BOOK OF ABSTRACTS AND
CONTRIBUTED PAPERS**

Edited by Vladimir A. Srećković, Aleksandra Kolarski,
Milica Langović, Filip Arnaut and Nikola Veselinović

Belgrade, 2024

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SCIENTIFIC RATIONALE

Efficiency of theoretical analysis, synthesis and modeling of various environments, depends on atomic data and their sources. In particular, for the modeling of stellar atmospheres and opacity calculations a large number of atomic data is needed, since we do not know a priori the chemical composition of a stellar atmosphere. The same holds for Earth observations. Consequently, the development of databases with atomic data as well as astro-geoinformatics is important. This meeting will bring together physicists, astro & geophysicists from Serbia and elsewhere to review the present stage of research in this field. The meeting is planned as an opportunity to consider the above-mentioned aspects of spectroscopic research on plenary sessions and then to work on the special mini-projects, which will result in common papers to be published in international scientific journals.

Venue

Palić, (Hotel Prezident – Palić), Serbia

Elastic electron scattering by xenon atom and data coverage within BEAMDB

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We investigated data on elastic electron scattering by xenon atom in the intermediate electron energy range (from 10 eV to 100 eV). Our preliminary survey have been contrasted to those data curated within BEAMDB - Belgrade Electron/Atom (Molecule) DataBase. BEAMDB¹ is one of the VAMDC (Virtual Atomic and Molecular Data Centre) nodes specialized for data on electron interactions (elastic scattering, excitation, ionization, energy loss spectra, threshold spectra) with atomic species. Previous recent work on xenon atom involves Auger spectra (Jureta *et al.* 2023). We just want to mention some of the earlier work on electron scattering that includes excitations (Filipović *et al.* 1988), ionization (Stephan and Märk, 1984) and elastic scattering (Cho *et al.* 2006).

Acknowledgements: This work has been partially supported by the Science Fund of the Republic of Serbia, Grant No. 6821, Atoms and (bio)molecules-dynamics and collisional processes on short time scale – ATMOLCOL.

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¹ <http://servo.aob.rs/emol/>

Dissociative electron attachment to isoflurane molecule in the gas phase

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Common halogenated anesthetic gases include halothane, isoflurane, sevoflurane, and desflurane. These gases can have varying global warming potential (GWP) and environmental effects (Langbein et al 1999). Halogenated aneastics also contribute to greenhouse gas emissions, although their impact varies based on their global warming potential GWP. We studied DEA to gas phase target by means of a crossed electron-molecular beam technique (Kopyra et al 2017). Dissociative electron attachment processes were investigated utilizing the crossed beam apparatus. In this technique the incident electron beam orthogonally intersects with molecular beam resulting in the formation of fragment anions. The calibration of the energy scale is achieved by measuring SF₆ signal, with intense resonance near 0 eV. Base pressure was in the range of $\sim 10^{-8}$ mbars and the working pressure around 3.2×10^{-7} mbars. We have measured halogenated anesthetic isofluran which showed a rich fragmentation. We have observed the following fragments: F⁻ = 19 a.m.u, Cl⁻ = 35 a.m.u, FHF⁻ = 39 a.m.u, CF₃⁻ = 69 a.m.u., C₂F₃⁻ = 81 a.m.u, C₂F₃Cl⁻ = 116 a.m.u

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Kopyra J, Maciejewska P and Maljković J., 2017. *Beilstein J. Nanotechnol*, 8, 2257

Wednesday 13.11.2024. (II day)	
Session: A&M DATA and HPC Chair: Ognyan Kounchev	
Lectures	
10:00-11:00	Nicolina Pop
11:00-11:30	Mihailo Savić
11:30-12:00	<i>Coffee break</i>
Lectures	
12:00-13:00	Milosavljević Aleksandar
13:00-13:30	Vesna Borka Jovanović
13:30-15:30	<i>Lunch Break</i>
15:30-16:30	Panel discussion: Atmosphere modeling and data, code comparison Chair: Bratislav Marinković
16:30-17:30	Poster session Chair: Bratislav Obradović
17:30-19:00	<i>Mini-excursion</i>
19:00-20:00	Work on mini-projects

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