

# IMAMP C

# 2025

14<sup>TH</sup> INTERNATIONAL MEETING ON  
ATOMIC AND MOLECULAR PHYSICS AND CHEMISTRY

17-19 June 2025 – Caen – France

# A few words

We are delighted to have you at the 14th International Meeting on Atomic and Molecular Physics and Chemistry, happening in Caen, France, from 17 to 19 June 2025.

This conference aims to support young researchers and foster interdisciplinary collaborations. Right from its inception (in 2010), IMAMPC has been organized by and for young researchers ( $\leq 10$  years after PhD completion).

The event brings together researchers from both theory and experimentation in the broad field of atomic and molecular physics and chemistry, opening up new research directions and opportunities for collaboration.

We believe that the conference in Caen will create a pleasant environment for fruitful discussions and inspiration.

The local organizing committee is composed of CIMAP members:

- Sreeja Raghunandanan
- Sumit Srivastav
- Antonin Bourgeteau
- Patrick Rousseau
- Alicja Domaracka
- Sylvain Maclot

# Program: overview

	Tuesday 17	Wednesday 18	Thursday 19
9h00	E. Campbell	S. Diaz-Tendero	V. Motto-ros
10h00	F. Porcelli	M. Roy	B. Senfftleben
10h30	Coffee	Coffee	Coffee
11h00	A. Paul	J. Šenk	J. Vukalovic
	R. Radloff	A. Mikhneva	D. Dubois
11h30	D. Piekarski	T. Reinert	V. Vismarra
	P. Paliwal	K. Kitajima	M. Vinitha
12h30	Lunch	Lunch	Lunch
14h00	A. Rodrigues de Paula	C. Borghesi	P. Nag
	T. Tímár-Grósz	D. Busto	T. Walmsley
15h00	A. Nair	P. Ma	M. Drissi
	Y. Iruستا	A. V. Riegel	G. Schöpfer
15h30	Coffee	Coffee	Coffee
16h00	L. Guillemot	Poster Session	S. Demes
	P. Guichard		C.-S. Jureddy
	M. J. Montes De Oca-Estévez		R. Martin Barrios
17h00			Closing
18h00			
22h			Cocktail

  

Keynote	45+15 min
Invited Talk	25+5 min
Selected Talk	12+3 min

# Comparative Study of Elastic Electron Scattering Cross Sections for Halothane, Isoflurane, and Sevoflurane at 200 eV in the Gaseous Phase

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Motivated by the significant contribution of anesthetic molecules to global warming and ozone depletion, we performed both theoretical and experimental investigations of elastic electron scattering from halothane, sevoflurane, and isoflurane at 200 eV. Research indicates that the majority of anesthetics administered to patients are exhaled unchanged into the atmosphere, and this release has been increasing over time. As halogenated compounds, these anesthetics have high Global Warming Potentials (GWP) and, in some cases, significant Ozone Depletion Potentials (ODP) (1).

The experimental setup used a crossed-beam apparatus that included an electron gun, a capillary gas needle, and a channeltron detection system. To normalize the measured relative cross sections, we employed the relative-flow method with argon as the reference gas. Theoretical calculations of the differential cross sections were carried out using the Independent Atom Model combined with the Screening Corrected Additivity Rule and interference effects (IAM-SCAR+I). The experimental and theoretical data were compared, offering valuable insights into the behavior of these anesthetic molecules at 200 eV (2,3,4).

Understanding the electron scattering cross sections of volatile anesthetics is important for assessing their potential impact on climate change. These cross sections are key parameters in atmospheric modeling, helping to improve predictions of their long-term behavior in the environment.

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## References

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\*Speaker

- (1) Langbein, T., Sonntag, H., Trapp, D., Hoffmann, A., Malms, W., Röth, E.P., Mörs, V., Zellner, R.: 1999, Br. J. Anaesth., 82, 66–73.
- (2) Maljković, J.B., Vukalović, J., Pešić, Z.D., Blanco, F., García, G., Marinković, B.P.: 2023, Eur. Phys. J. Plus, 138, 349.
- (3) Vukalović, J., Maljković, J.B., Blanco, F., García, G., Predojević, B., Marinković, B.P.:2022, Int. J. Mol. Sci., 23, 21.
- (4) Vukalović, J., Marinković, B. P., Rosado, J., Blanco, F., García, G., Maljković, J. B.: 2024, Phys. Chem. Chem. Phys., 26, 985-991.