



News Article

The 2022 COPCA Conference in Valletta

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Collisions represent a fundamental conduit of energy leading to physical and chemical changes in various systems. Ranging from the cosmic scale (e.g., cometary or asteroidal impacts with planetary bodies in the Solar System) to the nanoscale (e.g., the lithographic preparation of nanostructures on surfaces during focused electron beam induced deposition), the physics and chemistry of collisions underpin many important processes of inherent interest to both academic and industrial research. Indeed, collisions are routinely studied in several disciplines, including: molecular physics, nuclear fusion science, astrochemistry, planetary and Solar System science, nanotechnology, battery technology, and materials engineering.

It is likely that the investigative methodologies and techniques used in one field of research are applicable to solving problems in other fields, and thus cross-disciplinary collaborations in collisions science research are necessary and should be developed. Furthering such cross-disciplinary collaboration and exchange was the primary motivation behind the organisation of a *Collisions Physics and Chemistry and their Applications (COPCA) Conference*: bringing together researchers from apparently disparate fields whose work relates to collisions on the nano, micro, and macroscales to provide new insights into ongoing research projects, engender the formation of new cross-border and cross-disciplinary collaborative efforts, and stimulate or renew old collaborations whose progress had been stymied by the Covid-19 pandemic.

The mass cancellation of in-person conferences, congresses, and symposia and their replacement by online, virtual meetings proved to be one of the greatest challenges posed to scientific research by the pandemic, as the reduced ability for free conversation beyond the scope of scheduled presentations undoubtedly hindered the dis-

cussion of ideas and the formation of new collaborations between colleagues. Indeed, the organisation of the COPCA Conference itself was waylaid by problems associated with the epidemiological evolution of the pandemic. Thus, although initially planned to be held in October 2020, the Conference had to be postponed several times due to the emergence of different variants of the virus.

However, it was recognised that, in order to achieve the primary goals of the COPCA Conference, an in-person conference was necessary and thus the conference was repeatedly postponed until it was possible to hold the meeting as an in-person event, as originally planned. The inaugural COPCA Conference (the logo of which is depicted in [figure 1](#)) was successfully held between October 31st and November 4th 2022 at the Grand Hotel Excelsior in Valletta, Malta. The Conference was officially opened by Prof. Nigel J. Mason (President of the Europlanet Soci-

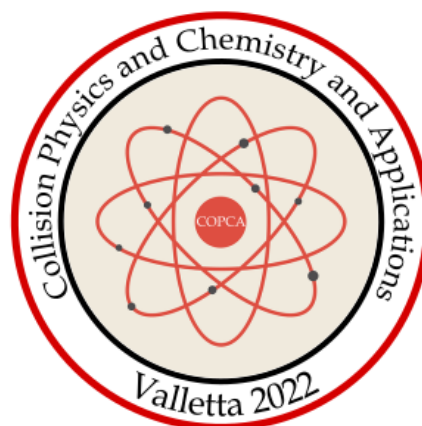


Figure 1: The 2022 COPCA Conference logo.

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Figure 2: The 2022 COPCA Conference picture, taken at the Trattoria AD1530 restaurant in Mdina.

ety) in his capacity as a co-organiser of the Conference, together with Prof. Alfred J. Vella (Rector of the University of Malta) and Ms. Ruth DeBrincat (Senior Director for Strategy, Research, and Technical Affairs at the Malta Council for Science and Technology).

The first session of the Conference was dedicated to research either conducted at the University of Malta, or by Maltese researchers based abroad. Indeed, the inclusion of and promotion of scientific research carried out by Maltese nationals was a fundamental theme of the Conference, and such research was presented in almost every session held throughout the Conference. The programme contained a number of sessions on varied fields of research linked to the central principle of collisions physics and chemistry, such as: the interaction of radiation and electromagnetic fields with biological matter, battery technology, astrochemistry and the origins of life, electron-molecule interactions, nanotechnology, plasma science, multiscale modelling, materials science and engineering, and shock processes. A poster presentation session was also held towards the end of the first day of the Conference, in which early career researchers were given the opportunity to present their work to fellow delegates.

The Conference also included an invited plenary lecture by Dr Sotirios Kiokias of the European Research Executive Agency, who provided an overview of the Marie Skłodowska-Curie Actions in Horizon Europe, with a particular focus on the Staff Exchanges Action. Overall, the Conference was attended by nearly 60 delegates from research institutions spread across 15 countries: Belgium, Colombia, Czechia, Estonia, France, Germany, Hungary, Italy, Latvia, Malta, Slovakia, Slovenia, Spain, Switzerland, and the United Kingdom.

The Conference also included social events, such as a walking tour of Valletta beginning at the Grand Hotel Excelsior, pausing for a visit to St John's Co-Cathedral, and culminating with a viewing of the 4pm saluting battery at the Upper Barakka Gardens. The conference dinner was held on November 3rd at the Trattoria AD1530 restaurant in Mdina (figure 2), during which prizes for best poster presentations were presented to early career researchers. The winners, Mr Matthew Dickers (University of Kent, United Kingdom), Ms Rebekah Attard-Trevisan (University of Kent, United Kingdom), and Dr João Ameixa (University of Potsdam, Germany), were presented their awards by Prof. Nigel J. Mason (figure 3).



Figure 3: Poster presentation prize winners receiving their awards. *Top panel:* Mr Matthew Dickers (centre) of the University of Kent flanked by Prof. Andrey V. Solov'yov (left) and Prof. Nigel J. Mason (right). *Middle panel:* Ms Rebekah Attard-Trevisan (centre) of the University of Kent flanked by Dr Maria Alfredsson (left) and Prof. Nigel J. Mason (right). *Bottom panel:* Dr João Ameixa of the University of Potsdam being awarded his prize by Prof. Nigel J. Mason (right).

The Conference itself proved to be a resounding success, with a number of new collaborations having been formed between researchers who had not previously met. The success of the Conference was also evidenced by the responses gained through post-meeting evaluation forms that were disseminated to the delegates. A total of 46% of delegates anonymously provided feedback through these forms, with 100% of those who responded indicating that they were either satisfied or very satisfied with the Conference as a whole as well as the choice of Malta as the host country; while 96% were either satisfied or very satisfied with the scientific content of the Conference. When asked whether the COPCA Conference should be continued as a biennial conference series, 100% of delegates who responded to the evaluation forms were supportive of this motion with 62% indicating that Malta should remain the host country for future editions of the Conference.

As such, consensus was reached among the organising committee for the next COPCA Conference to be held in October 2024 in Malta. This next edition of the Conference will seek to build upon the successes of the 2022 edition, but will aim to improve upon three aspects in particular. Firstly, the greater participation of female scientists and researchers should be encouraged: only 16% of speakers at the 2022 COPCA Conference were female. Although it is to be recognised that such a gender imbalance reverberates across science in general and physical sciences in particular, more effort will be made to further include female researchers as presenters and session chairs in future editions of COPCA. The increased participation of early career researchers will also be sought, with only 20% of speakers at the 2022 COPCA Conference being PhD students or post-doctoral research associates.

Secondly, future editions of the COPCA Conference should pursue further internationalisation by seeking contributions and presentations from beyond Europe. With the exception of one, all delegates attending the 2022

COPCA Conference represented research institutions and universities based in Europe. In an age of increased globalisation, greater discussions with scientific researchers based in Asia, Oceania, the Middle East, Africa, and North and Latin America could allow for yet further insights to be gleaned in collisions science research and fruitful collaborations to be established.

Finally, an increased participation of researchers based at the University of Malta as well as Maltese researchers based abroad is desired. As previously stated, one of the key goals of the COPCA Conference was to highlight and promote Maltese scientific research among the international community. In total, eight academic members of staff from the University of Malta were in attendance at the 2022 COPCA Conference, representing the Departments of Chemistry, Physics, Systems and Control Engineering, and Applied Biomedical Science, as well as the Institute of Aerospace Technologies. Three postgraduate students, from the University of Malta, also participated in the poster presentation session. Further efforts to increase these numbers will thus be a priority of the 2024 edition of the COPCA Conference.

If you believe that your research is relevant to the themes covered by the COPCA Conference and would like to participate in future editions, please do not hesitate to contact the corresponding author for more information.

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