

Conference Report

molQueST Conference, August 21st to 25th 2022, Congressi Stefano Franscini (CSF) Conference Center, Monte Verità, Ascona, Switzerland

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The molQueST conference forms a bridge between separately established scientific fields, *i.e.* quantum science, nanoscale science and technology, surface and interface science, novel local and non-local spin and electron transport and spectroscopies, as well as *ab initio* theory. Thereby, ‘molecule-based quantum science and technology’ builds upon breakthroughs in the art of making and investigating atomic and molecular architectures for their emerging electron and spin states. These can now be manipulated and probed in a controlled surface environment by using either local probes or external electric and magnetic fields. Such investigations are preparing the ground for using quantum and spin states in atoms and molecules at surfaces for sensing, information storage, and information processing (logic) devices.

In August 2022, after three years of postponement for the pandemic, the molQueST conference was attended by physicists, chemists and materials scientists active in academia, governmental research laboratories and industry who are interested in today’s advancements in future spintronic devices. More than 25 leading experts from all over the world were invited for presentations and more than 100 participants in total (Fig. 1) attended the lectures. A dense program had been assembled in different topically focused sessions, *i.e.* ‘Quantum coherent systems’, ‘Single

spins emerging into collective quantum systems’, ‘Electron/spin coupled systems: Arrays, chains and networks’, ‘Molecular quantum bits and supramolecular integration’ and ‘New approaches’. The participants gathered also at two lively poster sessions to discuss intensively on a person-to-person basis. The session provided the framework for the nomination of the CSF young scientist award by a committee led by Prof. S. Decurtins. The awardee, **Aishwarya Vishwakarma** is a young scientist from the Department of Materials of ETH in Zürich (Fig. 2) who reported about her recent achievement in ‘Probing magnetic coupling of spins on surfaces using EPR-STM’.

Additional to the scope of the conference, a vendor exhibition was organized. This comprised various specialized companies providing insight in their newest technologies and solutions that could be useful for scientists. World Scientific, the publisher who is widely reputed for publishing the Nobel lectures, offered a variety of relevant textbooks at discounted prices. The interaction between scientists and exhibitors resulted in fruitful discussions and offered unique opportunities for live demonstrations of some equipment.

A valuable asset to the molQueST conference was its venue: Monte Verità and its surroundings are known for being a place of inspiration for many artists and intellectuals. A small break in the dense program was made for an excursion to explore the scenic areas of Locarno, Ascona, Bellinzona, to hike up to the Pizzo Leone or just to enjoy the walk next to the Lago Maggiore. We



Fig. 1. Conference photo taken at the CSF on Monte Verità.



Fig. 2. The awardee of the CSF young scientist award: Aishwarya Vishwakarma is a young scientist from the Department of Materials of ETH in Zürich; here together with the chairs T.A. Jung and J. Dreiser.

believe that also this atmosphere contributed to the overall success of the conference which shall boost scientific development in the next years. It may be also worth to note that the spacious conference arrangement allowed us to hold the conference with relaxed COVID 19 prevention measures. The few cases of new infections reported to the organizer corresponded to the incidence of COVID in Switzerland at the time the conference had been held and could thus also have occurred from any typical activity at the time in Switzerland. Many, if not all participants left the conference stimulated by the presentations and discussions and shall soon present innovative approaches towards the scientific and technological challenges of ‘Molecule based quantum science and technology’.

It is important to say that the hosting by the Congressi Stefano Frascini and, in particular, the staff at Hotel Monte Verita contributed essentially to this success thanks to their flexibility and frictionless operation at maximum occupancy. Needless to say that the conference was also supported massively by the home institutions of the organizers, where staff worked many hours towards this success. Last but not least, the conference would not have been possible in this format without the funding provided by our Sponsors, *i.e.* the Division of Fundamental Research of the Swiss Chemical Society (SCG), and the Exhibitors as they are presented on the conference website www.molquest.ch. Also we are very grateful for the contributions of our home institutions and for Congressi Stefano Frascini (CSF) and the Swiss National Science Foundation (SNF) operating such a beautiful place for the hosting of scientific conferences in Switzerland.