Giulia Galli

Liew Family Professor of
Electronic Structure and Simulations

Areas of Research Expertise

Theoretical and computational modeling of materials, including materials for renewable energy sources and quantum information technologies; water and aqueous solutions.

Research Overview: Galli Group

The Galli Group uses first principles theory and computation to understand matter at the atomic scale. The group investigates solids, liquids, and nanostructures, and physical and chemical processes relevant to solar energy conversion, water resources and quantum information technologies.

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Research

Giulia Galli develops theoretical and computational methods to understand, predict, and engineer the properties of complex materials, encompassing solids, liquids and nanostructures. She works in close collaboration with experimentalists to interpret complex measurements, as well as to discover and engineer new materials with targeted properties for specific applications.

Galli's work in the development and application of predictive computational techniques has led to methods which broadened the applicability of ab initio molecular dynamics to multiple disciplines, including nanoscience and nanotechnology, to the prediction, from first-principles, of novel properties of liquids and nanostructures, which were confirmed experimentally, and to methods for efficient ab initio calculations of spectroscopic properties of solids and molecules.

Bio

Galli earned a degree in physics from the University of Modena, Italy, and a master's and PhD in physics from the international school of advanced studies (SISSA) in Trieste, Italy. After post-doctoral appointments at the University of Illinois at Urbana Champaign and at the IBM Research Laboratory in Zurich, she joined the Swiss Federal Institute of Technology in Lausanne, Switzerland, as senior scientist and then the Lawrence Livermore Laboratory as leader of the quantum simulation group. Before joining the University of Chicago in 2013, she was a professor of chemistry and physics at the University of California, Davis for eight years.

Galli is a Fellow of the American Physical Society (APS) and of the AAAS. She is the recipient of an award of excellence from the Department of Energy (2000) and of the Science and Technology Award from the Lawrence Livermore National Laboratory (2004).

Galli is currently the director of MICCoM (Midwest Integrated Center for Computational Materials), established by DOE in 2015 at Argonne National Laboratory, where she is a senior scientist.