

Iontronics is a newly emerging field of research that studies the science and technology of electronic properties and functions controlled by the movement and arrangement of ions, such as Na^+ , Cl^- or Ca^{2+} . The driving forces in iontronics include electric, diffusive and convective forces due to the presence of fluid flows. This multidisciplinary field lies at the interface between physics, chemistry, electronic engineering and even biological sciences.

The coupling between charge and fluid transport has found a wide range of applications, from signal transduction to energy generation or storage, flexible electronics, healthcare-related devices, membrane technology, and imaging at the nanoscale.

This volume brings together internationally leading researchers in this new interdisciplinary field to explore and exchange ideas on the physical and chemical principles underlying these phenomena, and the advances in both fundamental research and industrial applications.

In this volume the topics covered include:

- Iontronic coupling
- Iontronic dynamics
- Iontronics under confinement
- Iontronic microscopy

Front cover image: Colorful spheres represent ionic diversity that is harvested by iontronics. Counting ions in finite volumes, or cubes, in time, sheds light on their exotic dynamics.

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The papers presented are published in the Faraday Discussion volume together with a record of the discussion contributions made at the meeting. Faraday Discussions therefore provide an important record of current international knowledge and views in the field concerned.

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