

Symposium Voltage Control of Functional Interfaces: Magneto-ionic Meet Memristive Systems (SYVC)

jointly organized by
the Magnetism Division (MA),
the Chemical and Polymer Physics Division (CPP),
the Crystalline Solids and their Microstructure Division (KFM), and
the Thin Films Division (DS)

Karin Leistner
Institute for Metallic Materials
IFW Dresden e.V.
Helmholtzstraße 20
D-01069 Dresden
k.leistner@ifw-dresden.de

Sibylle Gemming
IBC
HZ Dresden-Rossendorf
D-01314 Dresden
s.gemming@hzdr.de

Liza Herrera Diez
C2N: Centre for Nanoscience and
Nanotechnology
U. Paris Sud and U. Paris Saclay
France
liza.herrera-diez@c2n.upsaclay.fr

Ying-Hao Chu
National Chiao Tung University, Taiwan
yhchu@g2.nctu.edu.tw

The control of functional material properties by an external voltage, as opposed to electric current based approaches, is intensely researched as a pathway to highly energy-efficient modern device operation. The magneto-ionic/electrochemical effect is a just emerging topic in the field of voltage controlled magnetic materials. In contrast to other magnetoelectric approaches, the magneto-ionic effect is based on ionic motion and electrochemical oxidation/reduction, and thereby allows to achieve large and non-volatile changes at room-temperature. However, the unambiguous identification of the microscopic origin is still challenging. The symposia gives an overview over magneto-ionic systems by covering both solid and liquid electrolyte-based architectures. Advanced interface-sensitive and in situ techniques that enable the investigation of the microscopic origin will be presented. A comparison with memristive/resistive approaches is made to elucidate differences and similarities in the underlying ionic mechanisms. The transfer to the tuning of other functional properties and from an interfacial effect to the control of bulk materials will be addressed to initiate a fruitful discussion about future key strategies.

Overview of Invited Talks and Sessions

(Lecture room H 0105)

Invited Talks

SYVC 1.1	Wed	15:00–15:30	H 0105	Magneto-ionic control of interfacial magnetism — ●GEOFFREY BEACH
SYVC 1.2	Wed	15:30–16:00	H 0105	Ionic Control of Materials Beyond Interfaces — ●DUSTIN GILBERT
SYVC 1.3	Wed	16:00–16:30	H 0105	Microscopic Mechanisms of Memristive Switching in Metal Oxides — ●RAINER WASER, STEPHAN MENZEL, REGINA DITTMANN
SYVC 1.4	Wed	17:00–17:30	H 0105	In-situ and operando SQUID magnetometry under electrochemical control — ●ROLAND WÜRSCHUM, MARKUS GÖSSLER, GREGOR KLINSER, EVA-MARIA STEYSKAL, HEINZ KRENN
SYVC 1.5	Wed	17:30–18:00	H 0105	Reversible chemistry as a tool for dynamic control of physical properties — ●ROBERT KRUK, SUBHO DASGUPTA, BIJOY DAS, HORST HAHN

Sessions

SYVC 1.1–1.5	Wed	15:00–18:00	H 0105	SYVC: Voltage Control of Functional Interfaces – Magneto-ionic Meet Memristive Systems
--------------	-----	-------------	--------	---