Dear Friends,

The Baltic Electrochemistry Conference is collecting researchers dedicated to the science and technology of electrochemistry around the Baltic. This conference, now the sixth in the series, will provide a forum for individuals from research organisations and companies to learn about the latest developments in this rapidly evolving field, to discuss with renowned experts and to build their networks in an informal and friendly atmosphere. The conference will cover all forms of electrochemistry, including, but not limited to experimental and theoretical aspects of charge transfer at electrochemical interfaces, electrochemical materials science and electrocatalysis. In addition, emergent technologies like, electrodeposition of nanomaterials and functionalized electrodes, and electrochemical nanostructuring will feature along with related poster presentation sessions.

It is now almost two decades since the very first Baltic Electrochemistry Conference was held in Kääriku Sport Centre in Otepää, Estonia on the subject of Interfacial Electrochemistry: structure, electrical properties and electrochemical reactivity. Since then there have been many advances in the areas of physical electrochemistry and materials as the need for sustainable energy and more environmental process technologies has expanded.

BEC16 will be held in the beautiful capital region of Finland and we look forward to welcoming you to enjoy fruitful discussions in the Finnish summer sunshine by the Baltic Sea in 2016!

Lasse Murtoniemi, Ben Wilson and Kirsie Yliniemi
On behalf of the organising committee

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**Call for Abstracts**
The organising committee of BEC16 would be pleased to receive high quality papers on all subjects concerned with electrochemistry, interfaces and materials. Oral and poster presentations are welcomed on the following topics:

- Ionic liquids
- Electrochemical energy conversion & storage
- Medical applications
- Nanoscale electrochemistry
- Hydrometallurgy & Industrial Scale Electrolysis
- Functionalized electrodes and sensors
- Electrodeposition and redox replacement
- Novel techniques in electrochemistry
- Liquid/Liquid interfaces
- Transport processes
- Theoretical & computational electrochemistry

**Submission of Abstracts**
Abstracts should be submitted in Microsoft Word (doc/docx) or PDF format by email to the Local Organisers at baltic2016@aalto.fi no later than 31st January 2016.

The official language of the conference will be English.

The conference is sponsored by International Society of Electrochemistry (ISE) and a selection of papers from the conference will be published in a Special Volume of Electrochimica Acta.

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**Organising Committee**
Dr. Benjamin Wilson
Dr. Kirsie Yliniemi
Prof. Mari Lundström
Prof. Päivi Laaksonen
Prof. Tanja Kellio
Prof. Eero Kontturi

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**Scientific Committee**
Prof. Lasse Murtoniemi, Aalto University (Chair), Finland
Prof. Elisabet Ahlberg, University of Gothenburg, Sweden
Prof. Johan Bobacka, Åbo Akademi University, Finland
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Prof. Sannakaisa Virtanen, University of Erlangen-Nuremberg, Germany
Prof. Mikhail Vorobyev, Moscow State University, Russia
Dr. Jingdong Zhang, DTU, Denmark

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**Registration Fees (Including conference dinner)**

<table>
<thead>
<tr>
<th>Registration Type</th>
<th>Before 31st March</th>
<th>After 31st March</th>
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</thead>
<tbody>
<tr>
<td>Regular</td>
<td>450€</td>
<td>500€</td>
</tr>
<tr>
<td>Student</td>
<td>300€</td>
<td>350€</td>
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</tbody>
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For more information on one day and accompanying persons rates please contact us or see our website for more information.

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**Important Deadlines:**
Deadline for abstract submission: 31st January 2016

**Final registration:** 15th April 2016

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Information about accommodation please visit:
chemistry.aalto.fi/en/current/6th_electrochemistry_meeting/

Photo: Joel Rousku/Visit Helsinki
UNUSUAL ELECTROCHEMICAL CELL “GERMANIUM-MONOHYDRATE OF POTASSIUM HYDROXIDE – GRAPHITE” AS SMALL-SIZED AND LOW-POWER SOURCES AT ROOM TEMPERATURES

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The search for and development of electrochemical cells with new electrolytes or new electrode–electrolyte assemblies is based on fundamental investigations of the electrochemical activity of materials. This poster present a search, the novelty of which is determined by the previously unknown combination of well-known materials as membrane–electrode assembly. These are a solid electrolyte based on potassium hydroxide monohydrate and a negative semiconducting electrode (germanium). We have prepared electrochemically active cells of the formula (−)Ge|KOH-nH2O|C(+) in KOH monohydrate) studied by us since 2007[1,2]. As the member of a family of water–potassium hydroxide system it is well and long known in the physical chemistry. Our interest was devoted to KOH · nH2O solid hydrates with \(n = 0.5, 1.0, 2.0\). Graphite (C) is well known as a multifunctional electrode.

Recently, it has been shown [2] that silicon exhibits in heterostructures with solid potassium hydroxide mono- and dihydrate electrochemical activity, the character of which depends on the doping level. It was naturally of interest to expand the group of previously studied electrode materials (C, Si, and Sn) in contact with solid hydroxide proton conductors by including another group-IV element Ge. On three figures electrochemical data by different types are shown. Top left are cyclic voltamograms at different ranges of cell voltage and rates. The middle picture allows to evaluate the exchange currents in a cell. On the bottom figure EIS are shown at some overpotential relatively e.m.f, = 0.7 V.

References
**UNUSUAL ELECTROCHEMICAL CELL**

"GERMANIUM - MONOHYDRATE OF POTASSIUM HYDROXIDE - GRAPHITE" as SMALLIZED and LIGHT SOURCE SOURCES at ROOM TEMPERATURE

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**n.1.** Usual (normal) VC curve was revealed for just now prepared cell, i.d. after cooling to room temperature, and checking that OCP - 0.7V.

Start of next operation indicate by:

- 2.7 V on cell, 0.4 mA, 25mV/s.

After relax 1 hour Cycling was switched on. On this figure first three cycles are shown. From fourth step the picture was stable, like slide n.2.

**n.2.** Stable Cyclic CV at different voltage and scan rate.

It is evident remarkable distinction of Ge response to changing of overpotential.

**n.3.** CV curve of the sample used for Impedance Spectroscopy at different load of electrochemical cell:

- Actually equilibrium;
- didn't achieve higher overpotential of Ge.

- Positively constant potential of Ge corresponding to the negative zone of cell, 0.4 V is considered as a battery with EMF - 0.5 V.

**n.4.** Nyquist diagram at different loads on the cell.

The same as in Fig.5 to present frequency dependence of major part at different load of cell. Strong capacitive effect near equilibrium point is evident.

**n.5.** Analysis of cyclic CV (n.2.) to determine the exchange current of Ge-electrode.

VC curve from n.2. presented in coordinates log I [A/cm^2] - log V [V]. At relative narrow range of potential of Ge there is subtle difference between red and blue lines. In contrast, for relatively higher overpotential of Ge there are two clearly different states (Fig. 0.5V).

Most probably they correspond to GeII and GeI.