



## Nanomaterials for Energy – Science/Industry Challenges

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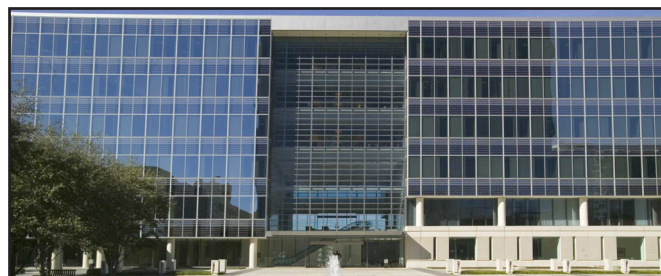
#### Abstract:

Increased understanding of the structure and behavior of materials at the nanoscale is advancing our ability to design novel devices for energy production. Nanomaterials play important role in this effort due to their properties related to increased relative surface, and the dominance of quantum effects. This creates new possibilities for tuning physical and chemical properties of materials by controlling the size and structure of constituent domains on atomic scale. Nanomaterials, due to greatly enhanced properties, have the potential to develop devices that offer superior efficiency and cost effectiveness for energy production including hydrocarbon recovery and renewable energy sources as fuel cells or batteries.

This lecture will also highlight the science/business relationships. The scientific results obtained in nanomaterials study have not only impact our fundamental understanding but also provide a path for new concepts and open avenues for designing advanced devices. Such innovation “on purpose” shows that we shouldn’t do business without science and shouldn’t do science without a business.

#### Biography:

Igor Kosacki has completed his PhD in Physics from Institute of Physics Polish Academy of Sciences and post-doctoral studies from Piere and Marie Curie University in Paris and Massachusetts Institute of Technology in Cambridge. He is holding Professor title awarded by the President of Poland. Currently, he is Emerging Technologies Expert at Honeywell International Inc. In his current role, he is responsible for the development new research program for oil and gas materials. He has published more than 120 papers in reputed journals and has over 4500 citations. He is serving as Chair of Nanotechnology and Corrosion Symposium on NACE Conferences.



#### Publication of speakers:

1. Lavik, Erin & Chiang, Y.-M & Kosacki, Igor & Tuller, H.L.. (2011). Enhanced Electrical Conductivity and Nonstoichiometry in Nanocrystalline CeO<sub>2-x</sub>. MRS Proceedings. 400. 10.1557/PROC-400-359.
2. Kosacki, Igor & Shumsky, Mark & Anderson, H.. (2011). Non-Stoichiometry and Structure of SrCe<sub>1-x</sub>Y<sub>bx</sub>O<sub>3</sub> Perovskite-Type Oxides. MRS Proceedings. 453. 10.1557/PROC-453-519.
3. Smirnova, Alla & Sadykov, V. & Muzykantov, V. & Mezentseva, Natalia & Ivanov, V. & Zaikovskii, Vladimir & Ishchenko, Arcady & Sammes, N. & Vasylyev, Oleksandr & Kilner, J. & Irvine, John & Vereschak, Viktor & Kosacki, Igor & Uvarov, N. & Zyryanov, V.V.. (2011). Scandia - Stabilized Zirconia: Effect of Dopants on Surface/Grain Boundary Segregation and Transport Properties. MRS Proceedings. 972. 10.1557/PROC-0972-AA10-05.
4. Kosacki, Igor. (2015). Nanomaterials and new technologies for oil and gas. Journal of Material Science & Engineering. 04. 10.4172/2169-0022.C1.027.
5. Kosacki, Igor & Srinivasan, Sridhar. (2017). Application of Raman Spectroscopy for Real Time Speciation Monitoring and Quantification. 10.4043/27582-MS.

#### Webinar on Material Science and Nanotechnology

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