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# Guest Lecture

**Title:**

## "Why are hybrid halide perovskites exciting materials?"


**Speaker:** Prof. Dr. László Forró

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Laboratory of Physics of Complex Matter, Switzerland


Date: Friday, 7th of April 2017

Time: 14:30

Place: Seminar Room CBEG02 (387, Photonics); Gußhausstraße 27


**Abstract:** Recently, it has been shown that $CH_3NH_3PbI_3$ is very promising material in photovoltaic devices[1] reaching light conversion efficiency (η) up to 22%[2]. A strong research activity has been focused on the chemistry of the material to establish the most important parameters which could further improve η and to collect photons from a broad energy window. The major trend in this field is in photovoltaic device engineering although the fundamental aspects of the material are not yet understood.

In my lab we have devoted considerable effort to the growth of high quality single crystals at different length scales, ranging from large bulk crystals (up to 100 $mm^3$) through nanowires[3,4] down to quantum dots of tens of nanometers of linear dimensions. The structural tunability of the material allows to study a broad range of physical phenomena including electrical and thermal transport, magnetism, optical properties, band structure by photoemission etc. With a selected set of measurements I will demonstrate our enthusiasm for this material both in basic science and in device applications[5,6].



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References:
1. Lee, M. M. et al.,Science 338, 643-647 (2012).
2. see reports of the Gaetzel and Hagfeldt groups
3. Horvath et al., Nano Letters 14, 6761, (2015)
4.Spina et al., (2016) Scientific Reports, 6, 1
5.Spina et al., (2015) Small, 11, 4823 ; Spina et al., Nanoscale, 2016, 8, 4888
6.Nafradi et al., J. Phys. Chem. C 2015, 119, 25204