nanoSeminar Series 2015

Institute for Materials Science

nanoSeminar – workshop
Friday, 05.06.2015
Seminar Room 115, Hallwachsstr. 3 (HAL)

Prof. Abraham Nitzan
School of Chemistry, Tel Aviv University, Tel Aviv, Israel

“Transport and spectroscopy in illuminated molecular junctions”

10:40 – 11:40

The interaction of light with molecular conduction junction is attracting growing interest as a challenging experimental and theoretical problem on one hand, and because of its potential application as a characterization and control tool on the other. From both its scientific aspect and technological potential it stands at the interface of two important fields: molecular electronics and molecular plasmonics. I shall review the present state of the art of this field and our work on optical response, Raman scattering, temperature measurements, light generation and photovoltaics in such systems.

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Prof. Abraham Nitzan
School of Chemistry, Tel Aviv University, Tel Aviv, Israel

Abraham Nitzan was born in Israel in 1944, received B.Sc. and M.Sc. degrees from the Hebrew University, and Ph.D degree from Tel Aviv University (TAU) in 1972. Following post doctoral studies at MIT and the University of Chicago he has returned to Tel Aviv University in 1975 where he is a professor of Chemistry since 1982 (Emeritus since 2014). Starting 2015 he will be a professor of Chemistry at the University of Pennsylvania, USA. At TAU he has served as Chairman of the School of Chemistry in 1984-7, Dean of the Faculty of Sciences in 1995-8 and director of the Institute of Advanced Studies 2003-15. His research focuses on the interaction of light with molecular systems, chemical reactions in condensed phases and interfaces and charge transfer processes in such environments. He has published over 300 papers, a comprehensive text ("Chemical Dynamics in Condensed Phases", Oxford U. Press, 2006), was assigned one patent and has given invited talks in over 150 scientific meetings. Since 1992 Nitzan is the incumbent of the Kodesh Chair of Chemical Dynamics at Tel Aviv University. Among his main recognitions are the Humboldt Award, the Israel Chemical Society Prize (2004) and Medal (2015), the Emet Prize and the Israel Prize in Chemistry. He is a Fellow of the American Physical Society and of the American Association for the Advancement of Science, a Foreign Honorary member of the American Academy of Arts and Sciences, a Foreign Associate of the US National Academy of Sciences and a member of the Israel Academy of Arts and Sciences. In 2010 he has received an honorary doctorate (Dr. Honoris Causa) from the University of Konstanz.

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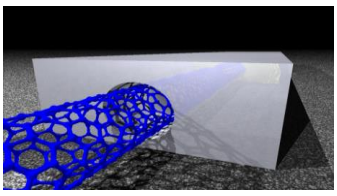
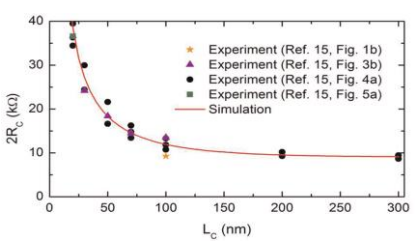
Dr. François Leonard
Materials Physics Department, Sandia National Laboratories, Livermore (CA), USA

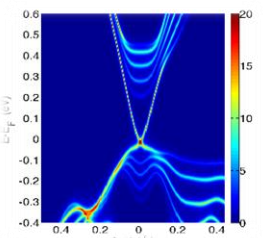
“Electrical Contacts to Nanoscale Materials and Devices”

12:15 – 13:15

Nanostructures such as carbon nanotubes, nanowires, graphene, and topological insulators are being intensively explored for future electronic, photonic, and energy applications. For all of these applications, it is necessary to form electrical contacts to the active material in order to inject or collect charge. While the scientific community and industry have invested significant resources to develop and control metal contacts to bulk semiconductor materials, nanostructures possess unique properties that differ significantly from bulk semiconductors, rendering existing models of electrical contacts often inapplicable at the nanoscale. In this talk, the importance and uniqueness of nanoscale electrical contacts will be introduced, and key research and development challenges to understand and control nanocontacts will be discussed. Specific examples of the use of computational modeling to elucidate the properties of contacts to carbon nanotubes and topological insulators will be presented.







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Dr. François Leonard
Materials Physics Department, Sandia National Laboratories, Livermore (CA), USA

Dr. François Léonard is Distinguished Member of the Technical Staff in the Materials Physics Department at Sandia National Laboratories in Livermore, CA. His primary research interests are in experimental and theoretical electronics and photonics.
Léonard received his Ph.D. in Physics at the University of Toronto, Canada in 1998. He spent two years as a postdoctoral fellow at the IBM T.J. Watson Research Center in Yorktown Heights, NY, before joining Sandia National Laboratories in 2000.
Dr. Léonard has authored over 75 journal publications in Nanoscience and Nanotechnology, has given more than 40 invited talks at national and international conferences, and has published a textbook entitled The Physics of Carbon Nanotube Devices.

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