

# 12<sup>th</sup> Nanotechnology Products and Summit

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## Bio and molecular electronics: Materials and devices

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In bio-electronics, one attempts to explore the nature of conductivity in biological systems such as DNA, peptide and proteins. Since some of these macromolecules are relatively large and can be attached to metal leads, one can investigate their electrical properties in the solid-phase and construct nano-sized devices in which the biological layers serve as the active part of the device. In this talk, I will describe our experimental approaches to bio-electronics and bio-optoelectronics materials and devices. Specifically several examples will be shown: (i) Engineered Light-emitting biomaterials, which are made using the efficient nanometric separation in certain type of proteins, (ii) Control over the electrical properties of nano-sized junctions via “natural” and site-controlled doping of proteins monolayers, and (iii) Construction and operation of reliable and reproducible bio-transistors.

### Biography

Shachar Richter has completed his PhD at the Weizmann Institute of Science, and Postdoctoral studies at Bell-Labs, USA where he got a position as a staff member. In 2003, he joined the School of Chemistry at Tel-Aviv University and from 2013, he is an Associate Professor at the Department of Materials Science and Engineering. He is the Head of the MSc program curriculum in Material Science in Israel, and the President of the Israel Vacuum Society. His research interests are molecular and bioelectronics, biocomposites and nanophotonics. He has published more than 60 papers in reputed journals and several patents, some of them are in commercialization process.

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