



# Bio-Nanophotonics : From Visible Bionanodots To Peptide Integrated Optics

Ministry of Science, Technology and Space of Israel  
School of Electrical Engineering, Tel Aviv University

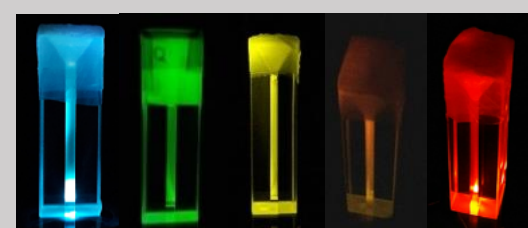
**November 13, 2018**

**Room 206 ,Wolfson building**

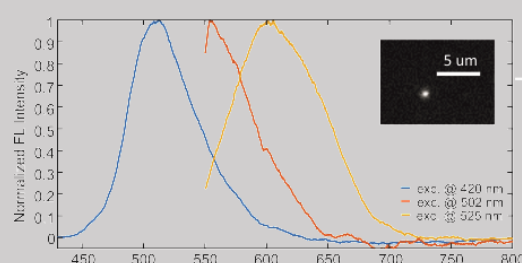
Bionanophotonics is a new paradigm which can revolutionize emerging fields of precision medicine and health monitoring. We report on a new concept of a deep modification of basic physical properties in bioinspired peptide nanostructures by thermally mediated refolding native  $\alpha$ -helical bioarchitectures into  $\beta$ -sheet networks. We will focus on a biophotonic effect of visible fluorescence found in peptide/protein  $\beta$ -sheet nanostructures, which is similar to that observed in amyloid nanofibrils associated with neurodegenerative diseases (Alzheimer, Parkinson and more). A new class of visible fluorescent bionanodots, unique method of super resolution imaging of single nanodots and theory describing this new phenomenon are discussed. This advanced biophotonics also promotes development of a new field of peptide-integrated optics towards medical diagnosis, light-induced therapy and implantable biochips.

<b>9:00 – 9:30</b>	<b>Registration and Light refreshment</b>
<b>9:30 – 9:40</b>	<b>Dr. A. Broisman, Director of Applied Science and Engineering, Ministry of Science, Technology and Space of Israel</b> "The mission of the Ministry of Science and Technology"
<b>9:40-10:20</b>	<b>Prof. Dan Marom, HUJI : Keynote lecture</b> "Integrated Photonics: platforms and functions"
<b>10:20 – 10:50</b>	<b>Prof. G. Rosenman, School of Electrical Engineering, Tel Aviv University</b> "Nanophotonics in Amyloid Bioinspired Nanostructures: Visible Bionanodots"
<b>10:50 – 11:10</b>	<b>PhD student N. Lapshina, Prof. T. Ellenbogen, School of Electrical Engineering, Tel Aviv University</b> "Imaging and optical properties of single visible peptide dots"
<b>11:10 – 11:30</b>	Coffee Break
<b>11:30 – 12:00</b>	<b>Dr. A. Natan, School of Electrical Engineering, Tel Aviv University</b> "Proton transfer induced fluorescence in self-assembled short peptides - a theoretical perspective"
<b>12:00 – 12:30</b>	Future Development: <b>Dr. B. Apter, Faculty of Engineering, Holon Institute of Technology,</b> "Peptide Integrated Optics: Passive and Active Optical Waveguiding in Amyloid Fibrils"
<b>12:30</b>	Lunch

Visible fluorescent in peptide bionanodots



Super resolution imaging of bionanodots



Active fluorescent waveguiding in FFF-tape

