Peptide Nanophotonics:
from Bioinspired Nanomaterials to Biomedical Nanoprobes

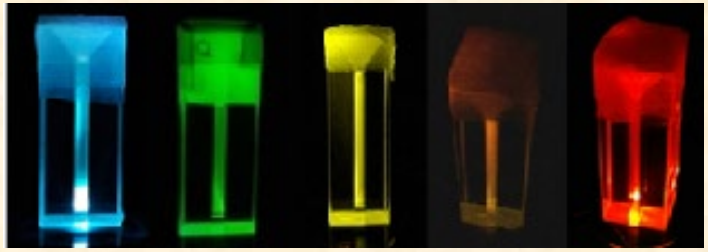
Israeli-Italian Workshop

Ministry of Science and Technology of Israel

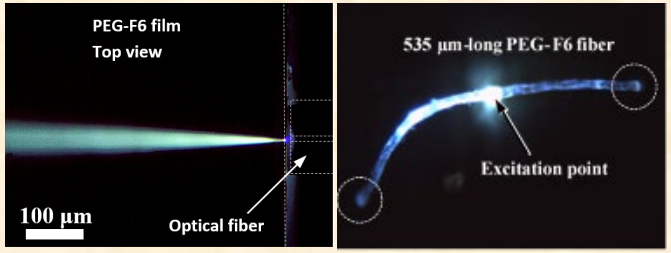
Holon Institute of Technology

Bionanophotonics is a wide field where combination of bioinspired optical materials, fundamental physics and nanotechnology results in development of advanced light diagnostics and therapy tools for precise nanomedicine. This Binational Workshop is focused on a novel paradigm found in recently developed bioinspired hybrid polymer-peptide amyloidogenic bionanostructures demonstrating unique photonic properties. Basic physics, new biomaterials and innovative photonic nanoprobes and integrated biooptical chips are discussed.

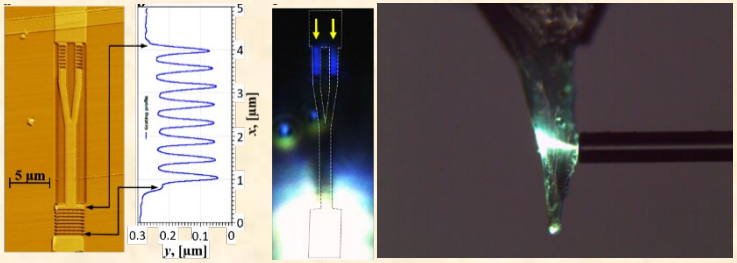
Visible Fluorescence Bionanodots



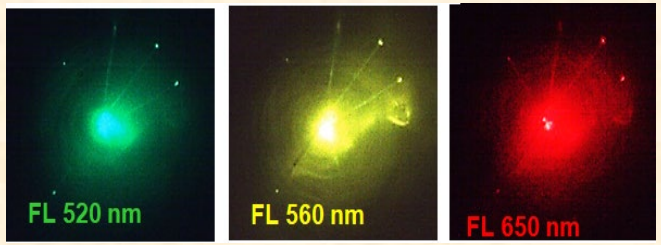
Waveguiding Effects in PEG-F6 Structures



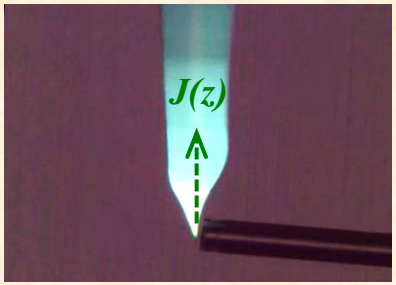
Peptide Integrated Optical Devices



Peptide Nanotube Probe Concept



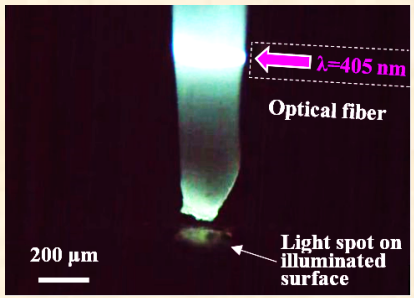
Experimental and Theoretical Study of Long-Range Light Propagation in Polymer-Peptide Bio-Nanostructures



$$\frac{\partial J(z)}{\partial z} = -(1-\eta)N\bar{\sigma}_a J(z)$$

$$J(z) \sim \exp[-(1-\eta)N\bar{\sigma}_a z]$$

FL Probe-Proof of Concept



Scientific Program

Chairperson: Prof Gil Rosenman (TAU)

1. **9.40-10.00, Introduction**
Prof. G. Rosenman, Tel Aviv University
Folded and Misfolded Proteins: Biological and Physical Properties

2. **10.00-10.40. Guest Lecture**
Prof. G. Morelli, University of Naples "Federico II", Naples, Italy
"Self-assembled peptides for diagnosis and therapy"

3. **10.45-11.15**
Dr. B. Apter (Faculty of Engineering, Holon Institute of Technology)
"Peptide Nanophotonics: Physics and Applications"

Coffee break, Light Refreshment

4. **11.45-12.15**
Prof. B. Fainberg (Holon Institute of Technology, Tel Aviv University)
"Theory of Long-Range Fluorescence Propagation in Fiber Structures of Different Origin"

5. **12.15-12.35**
PhD student, H. Barhom, Prof. P. Ginzburg (Tel Aviv University)
"Highly efficient visible fluorescent bionanodots"

12.40-13.20 LUNCH

13.20-15.00 Round Table. Discussion and Future Development