



Nanophotonics for Studying Molecular Interactions in Biological Systems

Lecturer: prof. Zygmunt (Karol) Gryczynski (Texas Christian University/ University of North Texas Health Science Center, USA)

Course description:

Detecting and monitoring activities and interactions of bio-molecules has been an essential for biomedical/medical diagnostics. Typical spectroscopic techniques can detect molecules of interest at low nanogram level, but many physiologically important markers need to be detected at picogram or even lower levels and sensitivity of detection becomes crucial factor for any diagnostic technology. Recent developments in nanotechnology are strongly impacting optical methods and enable new ultrasensitive assays for medical and chemical applications. A limiting step to increase detection sensitivity remains availability of appropriate probes. In this lecture series we will discuss emerging novel optical technologies and new types of probes that are most promising for practical applications in biotechnology.

Syllabus of the lecture:

1. Introduction to Fluorescence Methods
2. Fluorescence Technology for Studying Molecular Interactions in Biological Systems.
3. Forster Resonance Energy Transfer (FRET)
4. New Fluorescence Probes for Enhanced Detection and Imaging.
5. Multi-Pulse Pumping and Time-Gated Detection.
6. Nanophotonics and Plasmonics. Ultrasensitive Detection Technologies for Future Biochemical and Biomedical Detection.
7. Traveling Surface Plasmons for Detecting Molecular Interactions and Conformational Changes.
8. Practical Applications to Cancer Detection and Cellular and Tissue Imaging.

| TERMINY WYKŁADÓW | | | |
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| Data | Dzień tygodnia | Godzina | Sala |
| 10 czerwiec 2014 | Wtorek | 9-12 oraz 13-15 | LUWR |
| 11 czerwiec 2014 | Środa | 9-12 oraz 13-15 | LUWR |
| 12 czerwiec 2014 | Czwartek | 9-12 oraz 13-15 | LUWR |