cost TD1102
PHOTOTECH: BIOSENSORS & BIOCHIPS

Short Term Scientific Mission Td1102-26873

Project: Optical spectroscopy of proteoliposomes enriched in photosystem I

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Period of STMS (begin- and end date):2015-04-27 to 2015-06-08
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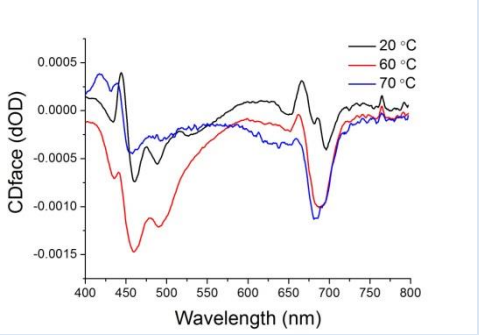

Aims & subject of work (480 characters, no spaces; Calibri 12):

In this work we utilized anisotropic circular dichroism (ACD) to characterize the supramolecular organization of oriented photosystem I (PSI) supercomplexes in their native lipid environment (PSI proteoliposomes) as a model for plausible artificial PSI containing devices. The obtained results will help understand better the basic mechanisms of energy utilization and dissipation and how they depend on the molecular organization of the PSI supercomplexes.

Argumentation of necessity of STSM (100 characters, no spaces; Calibri 12):

The obtained data provide spectroscopic tool for future characterization of PSI supercomplex macromolecular organization on solid surfaces or in LBL devices and thus for artificial PSI containing devices (biosensors).

Workplan/timeschedule followed (4 bullets max., Calibri 12):

- Preparation of PSI proteoliposomes from spinach/pea.
- Basic characterization of the PSI preparations by biochemical and biophysical techniques.
- Anisotropic circular dichroism on PSI proteoliposomes under different treatments (heat, light).

Main results and outcome (conclusions):

We have established that the main CD spectral features are preserved upon PSI gel trapping. The ACD spectra recorded for heat- and light-treated samples allowed for the discrimination of the LHCI and PSI core components in the CD spectra, as well as the signals originating from PSI oxidation. The obtained data will be useful for the characterization of PSI complexes embedded in different matrixes or adsorbed on solid surfaces.