

SAIP2014



Contribution ID : 384

The role of low-energy fluorescence bands in the photoprotection of the major plant light harvesting complex.

Tuesday 08 Jul 2014 at 11:10 (00h20')

Abstract :

Most photosynthetic organisms are designed to function optimally in low light conditions. However the typical daily incident irradiation is higher than the energy that a plant requires. Therefore it can lead to lethal consequences for the organism if the amount of light energy absorbed is not regulated efficiently. This regulation of the light energy is a major function of the light harvesting complexes in the Photosystem II (PSII) of the plants, a process known as non-photochemical quenching (NPQ). NPQ has been strongly linked to large, rapid intensity variations in the fluorescence; known as fluorescence intermittency or blinking. A major component of the thermal dissipation process, known as qE, is characterised by the appearance of low energy absorption and fluorescence bands. By mimicking the in vivo qE states of the major light harvesting complexes (LHCII) the protein dynamics under qE conditions can be monitored via changes in the absorption and fluorescent spectra. By using single molecule spectroscopy (SMS) it is possible to study a single antenna complex at a time in order to understand the molecular dynamics involved with qE. In this presentation the relationship between the fluorescence blinking and the low energy fluorescence bands (redshifts) is investigated.

Award :

Yes

Level :

MSc

Supervisor :

T.P.J. Kruger, tjaart.kruger@up.ac.za, University of Pretoria

Paper :

No

Primary authors : Mr. STOLTZ, Herman (University of Pretoria)

Co-authors : Dr. KRÜGER, Tjaart (University of Pretoria) ; Prof. VAN GRONDELLE, Rienk (Vrije University Amsterdam) ; Mr. GRUBER, Michael (Vrije University Amsterdam) ; Mr. BOTHA, Joshua (University of Pretoria)

Presenter : Mr. STOLTZ, Herman (University of Pretoria)

Session classification : Applied

Track classification : Track F - Applied Physics

Type : Oral Presentation