

SAIP2014



Contribution ID : 377

Using single-molecule spectroscopic methods to investigate the environmental dependencies of photoprotection in main plant light harvesting complex.

Tuesday 08 Jul 2014 at 10:20 (00h20')

Abstract :

It is not surprising that photosynthesis is a 'hot topic' in the field of Biophysics as it is both a beautiful example of where physics can be used to better understand the mechanisms at work in a biological system, and could also provide an alternative energy source for biofuels and photovoltaic electricity. Photo-protection processes, often referred to as Non Photochemical Quenching (NPQ), protect the plant in high light intensity conditions and consist of a range of mechanisms working at different timescales. We look at the very first step of NPQ in plants thought to take place in the main light harvesting pigment-protein complex LHC2. The change of pH and the resulting pH gradient across the membrane in which most of photosynthesis takes place have been proposed to be the trigger for the first step of NPQ. In this presentation an investigation will be shown of the NPQ pH dependency of LHC2 trimers by using single molecule spectroscopy combined with fluorescence lifetime analysis. The pH dependence of fast fluorescence intensity fluctuations will also be shown.

Award :

Yes

Level :

MSc

Supervisor :

Tjaart KrügerTjaart.Kruger@up.ac.zaUniversity of Pretoria

Paper :

No

Primary authors : Mr. BOTHA, Joshua (University of Pretoria)

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

Presenter : Mr. BOTHA, Joshua (University of Pretoria)

Session classification : Applied

Track classification : Track F - Applied Physics

Type : Oral Presentation