



University of Cyprus  
Department of Physics

## **SEMINAR**

**The Department of Physics of the University of Cyprus  
organizes a Seminar by**

**Assistant Prof. Theodossis Trypiniotis**

The Seminar will take place on **Monday, September 11, 2023**  
at **10:30 a.m.** in Room **B228** of the  $\Theta$ EE02 building

### ***Towards purely organic spintronic functionality***

Utilising the spin degree of freedom for enhancing future electronic functionality, and lately as a possible avenue for realising quantum computation hardware, has long been the driving force behind the thriving *research* field of spintronics. In this talk I will briefly introduce the techniques we use for studying spin dependent phenomena followed by a summary of some of our recent results on the correlation of the spin Hall angle to the backbone conformation in an organic semiconductor and on the effect of a ferromagnet's morphology on spin pumping into solution processed materials. The main part of the talk will focus on our latest study on spin current emission from an organic radical via spin pumping at room temperature. We have developed organic radical films with outstanding stability which we used for the fabrication of radical/ferromagnet bilayers. The spin current emission from the organic radical layer can be reversibly reduced when the ferromagnetic film is brought into simultaneous resonance with the radical. The results provide an experimental demonstration of a metal-free organic radical layer operating as a spin source, opening a new avenue for the development of purely organic spintronic devices. Finally, I will present an overview of key results from other research directions we are currently involved in. The first is on micromagnetic studies of antiskyrmions in synthetic antiferromagnets and the second on the development of nanomagnets for enhancing geophysical imaging in order to monitor subsurface processes such as carbon sequestration.

**The Seminar is open to the public and is part of the evaluation process for the promotion of Assistant Prof. Theodossis Trypiniotis.**