



The Department of Physics at the University of Cyprus is organizing under the “University of Diaspora” a seminar on

**Thursday, 6th of December 2018, time 4:00 p.m.**

Room B228, Building 13, New Campus

Speaker:

**Assistant Professor Phanourios Tamamis**  
**Department of Chemical Engineering**  
**Texas A&M University**

**“ From amyloids in diseases to amyloid materials and biomolecular condensed matter physics: Developing new tools to understand and design novel inhibitors and functional materials ”**

Amyloid fibrils are protein aggregates deposited mainly in the extracellular spaces of organs and tissues in diseases such as type II diabetes, Alzheimer's and Parkinson's disease. Successful strategies in preventing amyloid fibril formation include the use of  $\beta$ -wrapins which can sequester amyloid monomers, and thus inhibit amyloid formation by amyloidogenic proteins. I will demonstrate how a combination of computational methods, including molecular dynamics simulations and free energy calculations, have been used by our lab to understand the key structural and energetic determinants of  $\beta$ -wrapins' binding to the three amyloid monomers, and how the insights gained are currently being used to design novel highly potent  $\beta$ -wrapins which can potentially constitute novel promising Therapeutics for the diseases.

At the same time, the nanostructures formed by amyloid peptides provide excellent biocompatibility, rich phase behaviours, strong mechanical properties, and stability, and thus are highly attractive for the design of novel functional materials of the future with applications in biomedicine, environment and technology. I will demonstrate our work on designing amyloid materials for tissue engineering applications, and I will focus on the first theoretical protocol developed by our lab, combining optimization and biomolecular condensed matter physics, to design functional amyloid materials, capable of binding to specific ions and compounds, with diverse potential applications including separations and in drug-delivery.

For more information, please contact:  
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