

Seminar LMGP - 11/02/2017 - Dr Vincent Forge

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Seminar May 11, 2017

Grenoble INP - Phelma

Laboratoire LMGP

3 parvis Louis Néel - 38000 Grenoble

Accès : TRAM B arrêt Cité internationale

Free entrance - No registration

11:00 am - 2nd floor - seminar room

Self-Assembling Proteins for Bio-Inspired Nano-Electronics



forge v.jpg

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Abstract

The recent discovery of conduction in bacterial nanowires connected to electrodes makes it possible to envisage the development of a protein-based electronics. Based on the architecture of these systems, we have developed a conductive nanowire (**1**) consisting solely of proteins, based on the association of a prion domain (not involved in a disease) capable of self-assembly in the form of amyloid fibers and a domain whose function is the transport of electrons (a rubredoxin). The self-assembly of the prion domain allows the formation of a fiber which exposes on its surface rubredoxins sufficiently close to one another (less than 1 nm) to transport the electrons by successive jumps between redox centers. Our protein nanowires allow the

transport of electrons between an electrode and an enzyme over a distance of several microns. This approach should allow the development of biocompatible and biodegradable electronics, for biosensors or biofuel cells, for example.

(1)Altamura L, *et al.* (2017) *Nat Chem*, 9 (2), 157-163.

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