



**Aquitaine –Karnataka collaboration  
Scientific Project for Pre-PhD student exchange**

**Scientific Proposal**

Project Title	<b>Dynamic and structural investigations of carbon nanoparticles embedded in lipid membranes</b>	
Scientific domain	Biophysics, chemistry, physical-chemistry	
Summary (ca. 10 lines)	Carbon nanoparticles (CNP) are ubiquitously found in nature and in our environment. The potential of these nanoparticles to penetrate inside the cellular membrane is still poorly understood, mostly because these systems form soft material: they lack the crystalline order necessary for X-ray crystallography studies, and their small size limits the use of optical microscopy. In this project, we will apply sophisticated solid-state NMR techniques to collect structural information on the physical state of CNP embedded in lipid membranes, and to determine dynamic parameters related to perturbation of the lipid environment. We aim at providing a mechanism for CNP insertion inside the cellular membrane.	
Student profile wished	Chemist, engineer in chemistry	
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Timing & duration for project (give approximate ranges)	3-6 months	
Representative References	Loquet et al., JACS 2010, 2011, 2013	

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