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Biography : Frédéric Taran is in charge of the department of organic chemistry (50 persons) at the French Alternative Energies and Atomic Energy Commission (CEA) located at Saclay. Dr. Taran secured a PhD in chemistry at the Paris XI University under the supervision of Dr. Charles Mioskowski. In 1996, he moved to a post-doctoral position with Prof. Sir Derek Barton (Nobel prize 1969) at Texas A&M University (USA) and then came back to CEA in 1998 as permanent researcher. His research aims at developing new reagents for bioorthogonal chemistry to address important problems in the fields of bioconjugation, labelling, imaging and drug delivery.

Abstract title: Recent advances in fast, bioorthogonal ligation reactions

Abstract : The development of chemical reactions that can be performed in living systems (i.e. cells, model organisms) has long held unique fascination in the field of chemical biology. A bio-orthogonal reaction is characterized by the reaction of two functionalities, which will react under mild physiological conditions and are inert towards the biological environment. On the other hand, the discovery of chemical reactions fulfilling the criteria of the click chemistry concept continue to have a huge impact in many research fields. Quintessential example is the copper-catalyzed azide-alkyne cycloadditions (CuAAC). Our laboratory is involved in the discovery and use of such reactions. Recent work from our team identified several mesoionic compounds as new efficient dipoles for click reactions with terminal alkynes and for bioorthogonal reactions with cyclic alkynes. These reactions were used both for ligation, imaging and drug release applications.