Fluorescence correlation spectroscopy on electron transfer reactions : probing inter- and intramolecular redox processes

Sen, S.

Curriculum Vitae

Saptaswa Sen was born in Kolkata (formerly known as Calcutta), West Bengal, India, on May 18, 1984. He obtained his Bachelor degree in Chemistry at Jadavpur University, Kolkata in July 2005. He continued to pursue his Master program in Inorganic Chemistry at the same university. He completed his master degree in August 2007 with a thesis entitled "Catalytic studies on small organic molecules with Manganese-Salen complexes: synthesis, characterization and catalysis", under the supervision of Prof. Dr. Subratanath Koner. From May 2008-October 2011 he worked as full time junior and senior research fellow in the Chemical Science department of Tata Institute of Fundamental Research, Mumbai, India. In that period, he was supervised by Prof. Dr. Shyamalava Mazumdar and he worked in an Indo-French project in collaboration of Prof. Dr. Juan C. Fontecilla-Camps (Institute of Biological Sciences, Grenoble, France). In Mumbai, his research was focused on the development of a potential biocatalyst for the degradation of pesticides. His work was published in the Indian Journal of Chemistry (International Year of Chemistry Issue) and in a book entitled "Iron containing enzymes: Versatile Catalysts of Hydroxylation Reactions in Nature".

In November 2011, he came to The Netherlands to join the group of Prof. G.W.Canters and Prof. T.J.Aartsma at the Leiden Institute of Physics and to work on a project funded by NWO (Netherlands Organization for Scientific Research). The research was aimed at the investigation of photoinduced electron transfer reaction in a labeled metalloprotein by means of single molecule fluorescence spectroscopy, particularly fluorescence correlation spectroscopy (FCS). The results obtained are presented in this thesis. His work was presented at the international conference in Bioinorganic Chemistry (ICBIC 16, 2013) at Grenoble, France, the Dutch Meetings on Protein Chemistry and Biophysics Conferences (Veldhoven, 2012-2015) and several other national meetings. Oral presentation was given at the Chains Chemistry Conference (Veldhoven, 2015).

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List of Publications

1. Alessio Andreoni, Saptaswa Sen, Thijs J. Aartsma and Gerard W. Canters, Fluorescence correlation spectroscopy of labeled azurin reveals photo-induced electron-transfer between label and Cu center. [Manuscript submitted to **"**Proceedings of the National Academy of Sciences of the United States of America"].

2. Saptaswa Sen, Soumen Kanti Manna and Shyamalava Mazumdar, Oxidation of unnatural substrates by engineered cytochrome $P450_{cam}$, in "Iron-Containing Enzymes: Versatile Catalysts of Hydroxylation Reactions in Nature", Royal Society of Chemistry Publishing, Cambridge UK; Editors: Dr. Samuel de Visser and Dr. Devesh Kumar, Chapter 10, 330 (2011).

3. Saptaswa Sen, Soumen Kanti Manna and Shyamalava Mazumdar, Interaction of gammaxene with site-specific mutants of Cytochrome $P450_{cam}$, Indian Journal of Chemistry (Special issue on Bioinorganic Chemistry), 50A, 438 (2011).

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Special thanks to Marija and Manas with whom I shared my PhD life. They have patiently listened to all my thesis-related complaints and other personal issues. Thanks to other people of the Molecular Biophysics group with whom I worked: Dr. Namik Akkiliç, Dr. Muhammad Kamran, Dr. Mihaela Apetri, Biswajit and Dr. Ankur Gupta. I am also very happy that I could get help in purifying enzymes from Anneloes Blok from Chemistry department and Lionel Ndamba as well as Marcel Winter from our Biophysics laboratory. No research can be possible without wonderful colleagues and friends who have been my company in many occasions inside or outside the lab: Pravin, Aquiles, Faezeh, Enrico, Grabriele, Lena, Wietske, Sara, Olga, Pavel, Kirsten, Artur, Wim, Martin, Nemanja, Dominique, Stefano, Jeremie, Maria, Neli, Donny. Naming all of you goes beyond the aim of this page. I also thank Yvonne Kerkhof, Margareth van Hoorn and Barry Cats for their assistance and for making life easier.

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Saptaswa Sen