

**Invited Lecture**  
**Inter-Disciplinary Explorations in Chemistry (I-DEC 2018)**

**Pd-Free C-C Coupling Catalysis**

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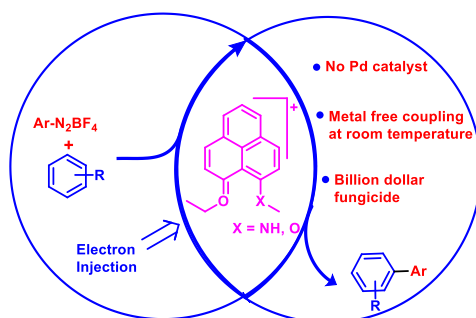
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**Abstract:**

In 2010, the Nobel prize in Chemistry was awarded for development of Pd-catalyzed C-C coupling which has direct impact in a numerous industrial processes. Today's major concerns on the industrially used catalytic systems have been: i) high expense of catalysts; ii) toxicity of transition metals; iii) difficulties in removal of trace amounts of toxic-metal residues from desired product; and finally iv) the large consumption of heavier and rare transition metals which do not meet the requirement of sustainable development. In this regard, the development of environmentally benign cost-effective catalysts is ideal. Naturally, the most recent trend in catalyst development heralded a new era using either earth-abundant, nontoxic, and inexpensive metals or metal-free catalysis.

This talk will discuss our recent developments on this concept<sup>[1-7]</sup> how systematically one can avoid Pd-metal based catalysts to develop C-C coupling catalysis. The emphasis will be given on how we came up with the development of the present concept in catalysis, which was primarily triggered by an entirely different area of spin electronics.<sup>[3, 8]</sup>



**References:**

- [1] A. Paryar *et al.* *J. Am. Chem. Soc.* **2015**, 137, 5955
- [2] S. Raha Roy *et al.* *ACS Catalysis* **2014**, 4, 4307
- [3] A. Mukherjee *et al.* *Acc. Chem. Res.* **2017**, 50, 1679
- [4] J. Ahmed *et al.* *Chemical Science* **2017**, 8, 7798
- [5] J. Ahmed *et al.* *J. Am. Chem. Soc.* **2018**, 140, 8330-8339
- [6] Vijaykumar *et al.* *Chemical Science* **2018**, 9, 2817-2825
- [7] Chakraborty *et al.* *Chem. Eur. J.* **2018** in press
- [8] K. Raman *et al.* *Nature* **2013**, 493, 509

# Invited Lecture

## Inter-Disciplinary Explorations in Chemistry (I-DEC 2018)

### Bio-Sketch of Speaker

#### Dr. Swadhin Mandal

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**Personal:** Nationality: Indian, Sex: Male

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#### **Academic and Professional Career**

**Current Position:** Head of the Department of Chemical Sciences, IISER Kolkata and Professor (**2018 Oct**– till date): Department of Chemical Sciences, Indian Institute of Science Education and Research Kolkata

Assistant Professor (2007 July-2012 December), Associate Professor (2013 Dec- 2018 Oct):

Department of Chemical Sciences, Indian Institute of Science Education and Research Kolkata

Alexander von Humboldt Postdoctoral Fellow (**2006-2007**): University of Goettingen, Germany.

Postdoctoral Fellow (**2002- 2006**): University of California, Riverside, USA.

Ph.D. (**1996-2002**): Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore, India.

M.Sc. (Chemistry, **1994-1996**): Indian Institute of Science, Bangalore, India. (Secured 1st rank in the University)

B.Sc. (Chemistry, **1990-1994**): University of Kalyani, Kalyani, India. (Secured 3rd rank in the University)

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#### **Awards and Recognition:**

♦ **Shanti Swarup Bhatnagar Prize in Chemical Sciences in 2018**

♦ Invited as **Editorial Advisory Board member** of the journal '**Inorganic Chemistry**' published by the American Chemical Society during 2019-2022

♦ Royal Society of Chemistry, UK has identified Dr Swadhin Mandal as an outstanding individual in chemical science and has invited to become a **Fellow of Royal Society of Chemistry (FRSC)** under the "**Leaders in the Field**" category.

♦ Awarded with **SERB Distinguished Investigator Award**.

♦ **CRSI bronze medal, 2019**

♦ Editorial advisory board member **J. Chem Sci.** since **2018**

♦ Delivered **Physics Colloquium** at University of Greifswald, Germany

♦ **YIM-Young Scientist Award -2012** by YIM-Boston held during 6-8th October, 2012 at MIT, Boston, USA.

♦ Served as **Editorial Advisory Board member** of the journal '**Organometallics**' published by the American Chemical Society during 2013-2015

♦ Alexander von Humboldt postdoctoral fellowship (**2006**).

♦ Visiting Faculty: University of Goettingen, Germany (May-June 2009, June-2010 and May-June-2011).