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

### Designing of templates to reach the distal C–H bond

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#### Abstract:

A practical protocol to simplify natural product synthesis by site selective C–H functionalization had always been a coveted target for chemists. Most often, directing group assisted metallacycle formation has served as an efficient strategy in ensuring promising regioselectivity. In this regard wide variety of *ortho*- functionalization stands as an archetype. Despite significant progress, directing group-assisted selective distal C–H functionalization in arenes (at *meta*- and *para*- positions) had remained an unexplored venture mainly due to the formation of a geometrically constrained metallacyclic transition state. To address these issues, a novel class of cleavable linker with nitrile based templates that direct efficient functionalization of distal *para*- and *meta*-C–H bonds are introduced. Recently, more robust heterocycle-based directing template has been designed to deliver the various and most useful functionalizations at remote *meta*-position. In addition, we have judiciously designed the directing group and substrate in a way which can selectively activate the distal aliphatic  $C(sp^3)$  bond. Applicability of these template based strategies have been demonstrated by synthesizing various natural products and complex molecules through post synthetic modifications. In this talk, some of our recent efforts toward design of the novel templates and late-stage functionalizations and mechanistic elucidation will be discussed.



#### **References and Notes:**

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## **Bio-Sketch of Speaker**

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Dr. Debabrata Maiti received his PhD from Johns Hopkins University (USA) in 2008 under the supervision of Prof. Kenneth D. Karlin. After postdoctoral studies at Massachusetts Institute of Technology (MIT) with Prof. Stephen L. Buchwald (2008–2010), he joined the Department of Chemistry at IIT Bombay in 2011 wherein currently he is an Associate Professor.

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