



तेजपुर विश्वविद्यालय

(केंद्रीय विश्वविद्यालय)

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TEZPUR UNIVERSITY

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Napam, Tezpur - 784 028, Assam, India

Department of Chemical Sciences

A REPORT ON

Collaboration of Prof. Dr. Holger Braunschweig, Institute of Inorganic Chemistry and Professor A. K. Phukan

1. Name of the Collaborative Activity: Collaboration of Prof. Dr. Holger Braunschweig, Institute of Inorganic Chemistry and Professor A. K. Phukan
2. Nature of Activity: R&D
3. Name of the Collaborating Agency/ Individual with affiliation, and contact details: Prof. Dr. Holger Braunschweig, Institute of Inorganic Chemistry, Lehrstuhl II, Am Hubland, Julius-Maximilians-Universität Würzburg, 97074 Würzburg, Germany
4. Summary of collaboration:

Base-stabilised borylenes that mimic the ability of transition metals to bind and activate inert substrates have attracted significant attention in recent years. However, such species are typically highly reactive and fleeting, and often cannot be isolated at ambient temperature. Herein, we describe a readily accessible trimethylphosphine-stabilised borylborylene which was found to possess a labile P–B bond that reversibly cleaves upon gentle heating. Exchange of the labile phosphine with other nucleophiles (CO, isocyanide, 4-dimethylaminopyridine) was investigated, and the binding strength of a range of potential borylene “ligands” has been evaluated computationally. The room-temperature-stable PMe_3 -bound borylenes were subsequently applied to novel bond activations including [2 + 2] cycloaddition with carbodiimides and the reduction of dichalcogenides, revealing that PMe_3 -stabilised borylenes can effectively behave as stable sources of the analogous fleeting dicoordinate species under mild conditions.

5. List of year-wise activities under the collaboration:

Activity 2019-20

Studies on phosphinoborylenes as stable sources of fleeting borylenes

Activity 2020-21

Hybrid Inorganic–Organic Cross-Metathesis between Diborenes and Acetylene

Signature and Seal of Head of Department/ Centre/ Cell

R. Borah
9.02.2022

Prof. & Head
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Name: Professor Ruli Borah
Designation: Professor & HoD