



**Prof. Ashwini K. Phukan**  
Department of Chemical Sciences  
Tezpur University  
Tezpur, Napam - 784 028  
Assam, INDIA  
e-mail : [ashwini@tezu.ernet.in](mailto:ashwini@tezu.ernet.in)  
Phone : +91-3712-275060  
Fax : +91-3712-267005

---

### **CERTIFICATE OF THE SUPERVISOR**

This is to certify that the thesis entitled “*Theoretical Studies on the Electronic and Ligand Properties of Carbenes and Biomimetic Model Complexes for the Active Site of [FeFe]-Hydrogenase*” submitted to the School of Sciences, Tezpur University in part fulfillment for the award of the degree of Doctor of Philosophy in the Department of Chemical Sciences is a record of research work carried out by **Mr. Bitupon Borthakur** under my supervision and guidance.

All help received by him from various sources have been duly acknowledged.

No part of this thesis has been submitted elsewhere for award of any other degree.

Date:  
Place:

Prof. Ashwini K. Phukan  
Professor  
Department of Chemical Sciences  
Tezpur University  
Assam, India



## TEZPUR UNIVERSITY

(A Central University established by an Act of Parliament)  
Napaam, Tezpur – 784 028, District – Sonitpur, Assam, India

---

### CERTIFICATE OF THE EXTERNAL EXAMINER AND ODEC

This is to certify that the thesis entitled “*Theoretical Studies on the Electronic and Ligand Properties of Carbenes and Biomimetic Model Complexes for the Active Site of [FeFe]-Hydrogenase*” submitted by *Mr. Bitupon Borthakur* to the School of Sciences, Tezpur University in part fulfillment for the award of the degree of Doctor of Philosophy in the Department of Chemical Sciences has been examined by us on \_\_\_\_\_ and found to be satisfactory.

The committee recommends for the award of the Degree of Doctor of Philosophy.

Signature of:

Principal Supervisor

Date:

External Examiner

Date: