

## The University of Queensland - IIT Delhi Academy of Research Joint PhD Project

<b>PROJECT TITLE</b>	<b>DEVELOPING NEW OXIDANTS FOR CATALYTIC DEHYDROGENATION AND C-H INSERTION</b>
<b>PROJECT CODE</b>	<b>UQIDAR 00170</b>
<b>PROJECT DESCRIPTION</b>	The use of catalysts within industry and academia is both wide-spread and immensely popular for performing any aspect of organic synthesis. From an academic perspective 15 laureates have won the Nobel Prize in chemistry for research on the design, development and understanding of catalytically mediated chemical and biochemical reactions. In an industrial setting catalysts are critical for the creation of pharmaceuticals, agrichemicals, petrochemicals, plastics, clothing, textiles and building/construction materials, and are estimated to generate over 900 billion dollars per annum. Chemical oxidants are indispensable reagents utilized in the course of undertaking a wide variety of catalytically mediated synthetic transformations, and will be the focus of the joint PhD program between the Williams and Jain groups. Specifically the student will apply new oxidants recently developed in Williams' laboratory and evaluate their performance against reactions in Jain's laboratory to optimise reaction scope and yields. In addition, new catalyst and reaction development will be on-going to underpin new directions.
<b>PROJECT OUTCOMES</b>	Teaching: The student will gain advanced training in chemical synthesis and catalysis in two locations, which adds valuable cultural and life experience. Research: Dehydrogenation is a rare, but highly sort after chemical transformation, and any developments in this area will be highly regarded by premier chemistry journals. The related reaction, C-H activation, is extremely popular at present and thus unique contributions in this area will generate substantial interest. Commercialisation: The above project has great potential to generate new catalyst IP. Williams already has one provisional patent in the space of new oxidants, and thus it is foreseen that developments in this area could have considerable commercialisation potential.
<b>ADVISORY TEAM</b>	<p><b>Professor Craig Williams</b>  <a href="http://staff.scmb.uq.edu.au/staff/craig-williams">http://staff.scmb.uq.edu.au/staff/craig-williams</a>  <a href="mailto:c.williams3@uq.edu.au">c.williams3@uq.edu.au</a>            School of Chemistry and Molecular Biosciences            The University of Queensland</p> <p><b>Professor Nidhi Jain</b>  <a href="http://www.chemistry.iitd.ac.in/faculty/jain.htm">http://www.chemistry.iitd.ac.in/faculty/jain.htm</a>    <a href="mailto:njain@chemistry.iitd.ac.in">njain@chemistry.iitd.ac.in</a>            Department of Chemistry            Indian Institute of Technology Delhi</p>
<b>TYPE OF STUDENT</b>	Applications are open to i students <a href="#">who meet eligibility criteria</a> . note: i-students must have own scholarship to apply (CSIR, UCG-NET, etc)
<b>DISCIPLINE BACKGROUND OF STUDENT</b>	Ideally, this project requires students with a background in organic chemistry, synthetic organic chemistry, organic synthesis, catalysis
<b>IDEAL CANDIDATE</b>	Essential capabilities: <ul style="list-style-type: none"> <li>Undertaken an Honours or Masters level research project in synthetic organic chemistry.</li> </ul>

APPLICATION  
PROCESS

- An ability to run and provide basic interpretation of NMR, IR and MS spectroscopy.

Desirable capabilities:

- Knowledge of the chemical sciences, especially synthetic organic chemistry.

Expected qualifications (courses, degrees, etc):

- The student should have an Honours or Masters degree in synthetic organic chemistry.

Apply online by the due date: <https://www.uqidar.org/students/how-to-apply/>