

# BIOINORGANIC CHEMISTRY

## OVERVIEW :

In today's environment, interdisciplinary studies are playing a major role. One cannot restrict themselves within a particular branch of science. Thus, for a chemistry student, the study of bioinorganic chemistry is quite useful and interesting. Bioinorganic chemistry is a field that examines the role of metals in biology. Bioinorganic chemistry includes the study of both natural phenomena such as the behavior of metalloproteins as well as artificially introduced metals, including those that are non-essential, in medicine and toxicology. There is a particular interest in this field when one is interested to understand the chemistry behind biological processes.

As a combination of biochemistry and inorganic chemistry, bioinorganic chemistry is important in elucidating the implications of electron-transfer proteins, substrate bindings and activation, atom and group transfer chemistry as well as metal properties in biological chemistry. The discipline also includes the study of inorganic models or mimics that imitate the behavior of metalloproteins. It is important not only for chemists but even for biologists to understand the mechanism of how biological systems work.

Internationally acclaimed academics, researchers and practitioners with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of Bioinorganic chemistry will be teaching the course.

Course Name/Details	<b>Bioinorganic Chemistry: Start/end date: December 5-9, 2016</b>  Classification and scope of inorganic elements in biological system, behaviours of inorganic elements, introduction of trace elements, the essential ultra-trace metals and non-metals. Blue copper proteins, Mitochondrial electron-transfer chain, Iron-sulfur proteins, Cytochromes <i>Tutorial 1:</i> Problem solving session with examples Molybdenum enzyme: xanthine oxidase, Zinc enzymes: carbonic anhydrase, carboxypeptidase and interchangeability of zinc and cobalt in enzymes; Vitamin B12 and B12 coenzymes, Nitrogen metabolism, Chemistry of N <sub>2</sub> reduction, Mo-Dependent nitrogenase, and other nitrogenases, Photosystem I and II, Chlorophyll, Oxygen evolving complex (OEC), 4Mn –Cluster and O <sub>2</sub> evolution <i>Tutorial 2:</i> Problem solving session with examples  <b>Number of participants for the course will be limited to 50.</b>
Who can attend?	<ul style="list-style-type: none"><li>• If your background is in chemical sciences or life sciences and/or interested in the area at the interface of chemistry &amp; biology.</li><li>• If you are a student or faculty from academic institution/University or technical institution interested in learning basic and advanced level topics in bioinorganic chemistry.</li></ul>
Fees	<ul style="list-style-type: none"><li>• Participants from Abroad: US \$500</li><li>• Industry/Research organization: Entire course: Rs. 30,000/-</li><li>• Academic Institutions: Rs. 1000/-</li></ul> <p>The above fee includes all instructional materials. Participants will be provided with single bedded accommodation on payment basis upon request.</p>

## THE FACULTY



**Dr. Patricia C. Dos Santos** is the faculty of Department of Chemistry, Wake Forest University, Winston-Salem, NC – 27109, USA

Her research interest is at the interface of chemistry and biology which involves the biosynthesis of sulfur-containing cofactors in bacteria. The research in her group explores the mechanistic steps associated to essential assembly of Fe-S clusters and the functions of these metallocofactors when associated to their protein partners.



**Dr. Sunil G. Naik** is the faculty of the Department of Chemistry, School of Chemical Sciences and Pharmacy, Central University of Rajasthan, Bandarsindri, Rajasthan, India

His area of research has its locus in the interface of Chemistry and Biology and some of his research works are thematically focused on the structural and functional studies of iron-containing proteins, which catalyze a variety of important biological reactions.

### Course Coordinator

**Dr. Sunil G. Naik** Ph.D. FRSC

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