

## **Internal Seminar**

### **NMR-Based Structural Characterisation of Peptides Mimicking Carbonic Anhydrase in Solution**

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The hydration of CO<sub>2</sub> and the reverse reaction are crucial for biological functions like respiration, maintaining stable blood pH and secretion and absorption of various body fluids. This significant biological reaction is catalysed by metalloenzyme Carbonic Anhydrase (CA), with its function critically dependent on a zinc ion coordinated by three histidine residues in the active site. In our study we designed and synthesised four seven-residue peptides (I, II, III, IV) that mimic Zn<sup>2+</sup> binding site of CA. Out of the four designed peptides, three (I, II, III) exhibited catalytic efficiency with different turnover rates. Nuclear Magnetic Resonance (NMR) spectroscopic technique was employed to determine the structure of these peptides in solution state and correlate their structure to their catalytic efficiencies. The study aims to offer a foundation for the development of CA-mimics with potential applications in catalysis and carbon capture.

***Monday, Mar 02<sup>nd</sup> 2026***

***16:00 Hrs***

***Seminar Hall, TIFRH***