

## **Seminar**

### **Serendipity and Strategy in Visible-Light Photocatalysis**

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Scientific breakthroughs often arise from unexpected observations, and my research journey in visible-light photocatalysis is a testament to the power of surprise in discovery. In this talk, I will present a suite of novel and serendipitous transformations developed during my PhD and postdoctoral research, all driven by the redox flexibility and sustainability of visible-light activation. The first part will focus on unconventional reactions of vinyl halides under visible-light irradiation—transformations that defied initial expectations and opened new avenues in synthetic methodology. These studies not only revealed unique mechanistic pathways but also offered practical strategies for molecular diversification. I will then briefly introduce our enantioselective copper-catalysed synthesis of GABA derivatives, demonstrating how photocatalysis and transition-metal catalysis can be effectively merged. The presentation will conclude with a newly developed phosphonylation chemistry from the Aggarwal group, highlighting our ability to forge C–P bonds under mild and selective conditions. Together, these findings illustrate the synthetic power and mechanistic richness of visible-light photocatalysis. As this field continues to grow, it holds great promise for advancing green and efficient molecular construction. I look forward to discussing these discoveries with the TIFR Hyderabad community and exploring future directions in this dynamic field.

***Tuesday, Jul 29<sup>th</sup> 2025***

***14:30 Hrs (Tea / Coffee 14:15 Hrs)***

***Auditorium, TIFRH***