

MONDAY

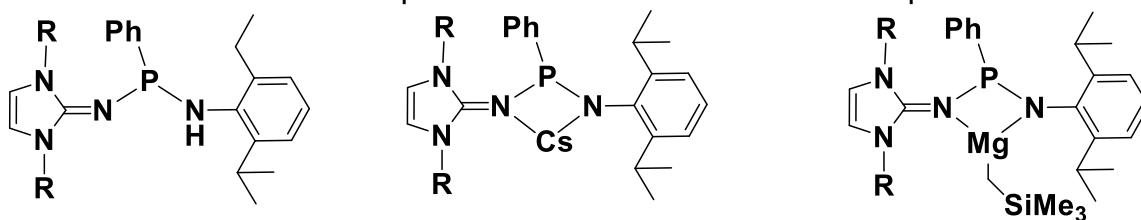
# COLLOQUIUM

## Alkali- and Alkaline Metal Complexes as Catalysts for Sustainable Polymers

V Chandrasekhar (TIFR, Hyderabad)

20 Jan 2025 (Monday) | 16:00 Hrs (Tea / Coffee 15:45 Hrs) | Venue: TIFRH Auditorium

Efficient polymerization methods for the preparation of sustainable polymers such as poly (lactic acid) or poly ( $\epsilon$ -caprolactone) and the corresponding co-polymers are important targets of research. In this context, unsymmetrical imino-phosphanamidinate, N-P-N ligands (Figure) were designed and synthesized, and their reactivity with various metal precursors was studied. In general, such reactions proceed to afford a monoanionic chelating N-P-N motif that can bind to metal centres affording four-membered rings<sup>1-4</sup> (Figure). Utilising this strategy we prepared a Cs(I) complex<sup>2</sup> and a Mg(II) complex<sup>4</sup> which were studied by NMR and crystallography. Further, these complexes were shown to be highly efficient catalysts for the homopolymerization of lactide and  $\epsilon$ -caprolactone as well for the block co-polymerization of lactide with caprolactone.<sup>2,4</sup> These results will be presented.



Figure

### References:

1. Karmakar, H.; Kumar, R.; Sharma, J.; Bag, J.; Pal, K.; Panda, T. K.; Chandrasekhar, V. *Dalton Trans.* 2023, 52, 4481-493.
2. Sagar, S.; Karmakar, H.; Nath, P.; Sarkar, A.; Chandrasekhar, V.; Panda, T. K. *Chem. Commun.* 2023, 59, 8727-8730.
3. Karmakar, H.; Sai Kumar, G.; Pal, K.; Chandrasekhar, V.; Panda, T. K. *Dalton Trans.* 2024, 53, 10592-10602
4. Nath, P.; Sagar, S.; Ray, A.; Karmakar, H.; Sarkar, A.; Chandrasekhar, V.; Panda, T. K. *Chem. Commun.* 2025 (accepted for publication).