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Biography

Our research group is broadly focused on organic and organometallic materials chemistry. The central theme of our research involves the rational design and creation of novel molecular and macromolecular structures for light emitting devices (energy to light conversion), solar cells (light to energy conversion) and molecular electronic applications. Our current goals involve investigations into achieving highly stable and luminescent triplet phosphors based on organometallic complexes by creation of new metal-ligand interactions. In the field of molecular electronics, we pursue different functionalization strategies of organic and organometallic systems to tailor their electronic properties to achieve molecular memory devices.

Our group is exposed to a broad range of topics including synthetic chemistry, organic chemistry, polymer chemistry, inorganic chemistry, organometallic chemistry and photochemistry.

The following topics are currently under investigation:

Organic and Organometallic Materials Chemistry

Organometallic light emitting molecules

Electronic materials and molecular electronics

Research output

Integrated circular dichroism and circularly polarized luminescence measurements

Rodger, A., Venkatesan, K., Aldrich-Wright, J. R., Brodie, C. & Garcia-Bennett, A. E., 5 Mar 2024, In: Analytical Chemistry. 96, 9, p. 3810-3816 7 p.

New approaches to stretched film sample alignment and data collection for vibrational linear dichroism

Wormell, P., Michal, P., Scott, A., Venkatesan, K., Mylvaganam, K., Arx, T. V., Kitamura, J., Koshoubu, J. & Rodger, A., 10 Oct 2023, In: ACS Omega. 8, 40, p. 37490-37500 11 p.

The search for efficient true blue and deep blue emitters: an overview of platinum carbene acetylide complexes

Maganti, T. & Venkatesan, K., May 2022, In: ChemPlusChem. 87, 5, p. 1-16 16 p., e202200014.

Surface plasmon-coupled dual emission platform for ultrafast oxygen monitoring after SARS-CoV-2 infection

Rai, B., Malmberg, R., Srinivasan, V., Ganesh, K. M., Kambhampati, N. S. V., Andar, A., Rao, G., Sanjeevi, C. B., Venkatesan, K. & Ramamurthy, S. S., 24 Dec 2021, In: ACS Sensors. 6, 12, p. 4360-4368 9 p.

Recent advances in the development of blue and deep-blue emitting gold(I) and gold(III) molecular systems

Malmberg, R. & Venkatesan, K., 21 Dec 2021, In: European Journal of Inorganic Chemistry. 2021, 47, p. 4890-4902 13 p.

Conceptual advances in the preparation and excited-state properties of neutral luminescent (C^N) and (C^C^*) monocyclometalated gold(III) complexes

Malmberg, R. & Venkatesan, K., 15 Dec 2021, In: Coordination Chemistry Reviews. 449, p. 1-22 22 p., 214182.

Benzalkonium chloride antagonises aminoglycoside antibiotics and promotes evolution of resistance

Short, F. L., Lee, V., Mamun, R., Malmberg, R., Li, L., Espinosa, M. I., Venkatesan, K. & Paulsen, I. T., Nov 2021, In: EBioMedicine. 73, p. 1-8 8 p., 103653.

Monocyclometalated (C^N) gold(III) metallacycles: tunable emission and singlet oxygen (1O_2) generation properties

Malmberg, R., Suter, D., Blacque, O. & Venkatesan, K., 19 Oct 2021, In: Chemistry - A European Journal. 27, 58, p. 14358 1 p.

Monocyclometalated (C N) Gold(III) metallacycles: tunable emission and singlet oxygen ($^1\text{O}_2$) generation properties
Malmberg, R., Suter, D., Blacque, O. & Venkatesan, K., 19 Oct 2021, In: Chemistry - A European Journal. 27, 58, p. 14410-14417 8 p.

Concentration effect in surface plasmon-coupled phosphorescence (SPCP) emission engineering with augmented s-polarization from N-heterocyclic carbene platinum(II) complexes
Rai, B., Suter, D., Srinivasan, V., Venkatesan, K. & Ramamurthy, S. S., 5 Aug 2021, In: Journal of Physical Chemistry C. 125, 30, p. 16681-16688 8 p.

Tunable light-emission properties of solution-processable N-Heterocyclic carbene cyclometalated gold(III) complexes for organic light-emitting diodes
Malmberg, R., von Arx, T., Hasan, M., Blacque, O., Shukla, A., McGregor, S. K. M., Lo, S-C., Namdas, E. B. & Venkatesan, K., 3 May 2021, In: Chemistry - A European Journal. 27, 25, p. 7265-7274 10 p.

Design and synthesis of boron complexes as new Raman reporter molecules for sensitive SERS nanotags
Javaid, R., Sayyadi, N., Mylvaganam, K., Venkatesan, K., Wang, Y. & Rodger, A., Dec 2020, In: Journal of Raman Spectroscopy. 51, 12, p. 2408-2415 8 p.

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Malmberg, R., Bachmann, M., Blacque, O. & Venkatesan, K., 7 Mar 2019, In: Chemistry - A European Journal. 25, 14, p. 3627-3636 10 p.

Nickel catalyzed synthesis of 4,4'-bichromenes/4,4'-bithiochromenes and their Atropisomerism
Muthuramalingam, S., Garg, J. A., Karthick, R., Fox, T., Blacque, O., Venkatesan, K., Ramanathan, S., Kabilan, S. & Balasubramanian, K. K., 7 Jan 2019, In: Organic Chemistry Frontiers. 6, 1, p. 134-139 6 p.

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Stable N-heterocyclic carbene (NHC) cyclometalated (C^C) gold(III) complexes as blue-blue green phosphorescence emitters
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Lissel, F., Schwarz, F., Blacque, O., Riel, H., Lötscher, E., Venkatesan, K. & Berke, H., 15 Oct 2014, In: *Journal of the American Chemical Society*. 136, 41, p. 14560-14569 10 p.

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Zehnder, T. N., Blacque, O. & Venkatesan, K., 21 Aug 2014, In: *Dalton Transactions*. 43, 31, p. 11959-11972 14 p.

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