

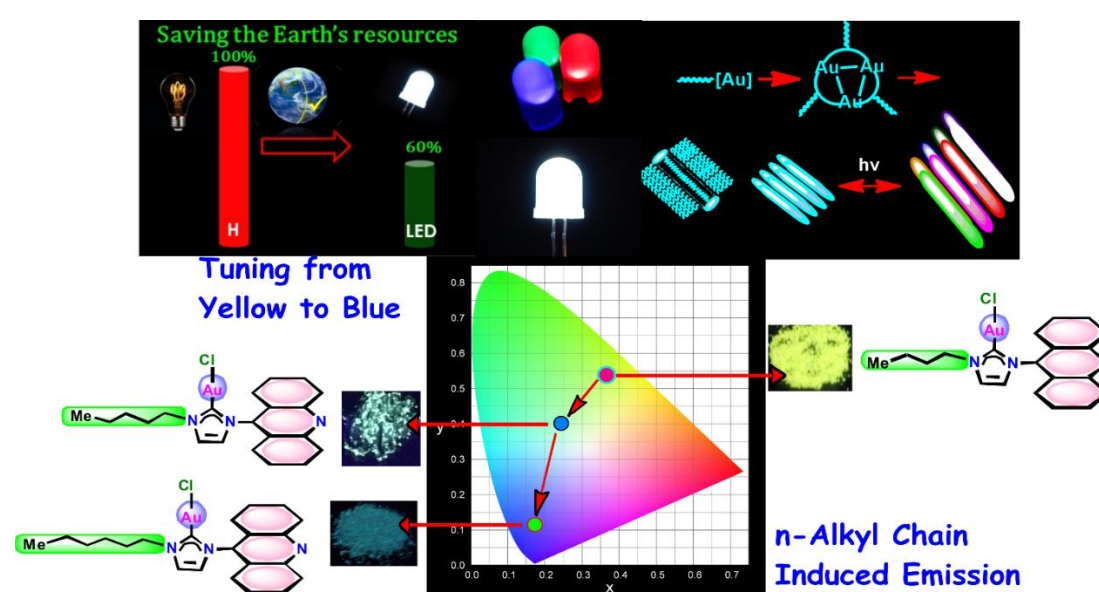
## Connection of Chemistry between IITH & RU, Japan

Highly energy-efficient LED technology contributes to saving the Earth's resources from 20% to 40% compared to conventional technology as about one-fourth of world electricity consumption is used for lighting purposes. Nevertheless, the current LED technology is limited with selected color options. Indeed, with current technology, we can't achieve the "True Color" from a single material. Our target is to tune the light emission through the nanoscale molecular aggregations. Therefore, the research collaboration has been established between our Organometallics Lab at IIT Hyderabad and Prof. Dr. Osamu Tsutsumi's lab at Applied Chemistry, Ritsumeikan University, Japan, through the generous support of the JICA Friendship Project in November 2015. The purpose of our interdisciplinary research collaboration is to advance fundamental understanding to solve problems at the nanoscale molecular aggregation level.

We have been working on this cutting-edge problem to identify the single source material to emit blue light or even direct white light using organo gold precursor or equivalent materials. One of the most challenging tasks in this research area is to identify the blue or white emitting system without chromophore's contribution. As a result, the n-alkyl chain stimulated paradigm luminescence shift with unique emission in N-heterocyclic carbene gold(I) chloride complexes have been demonstrated for the first time in the crystalline phase. The research collaboration has been further strengthened through the JICA PhD, RU JASSO internship, and RU Post-Doc fellowships. Four M1 students Mr. Shinya Nakamura, Mr. Masaya Yamane, Mr. Shohei Sugiyama, and Mr. Ozaki Kazuhisa, were invited through JICA from RU, Japan, to work in Organometallics Lab. Similarly, Dr. Katam Srinivas, Dr. Vaddamanu

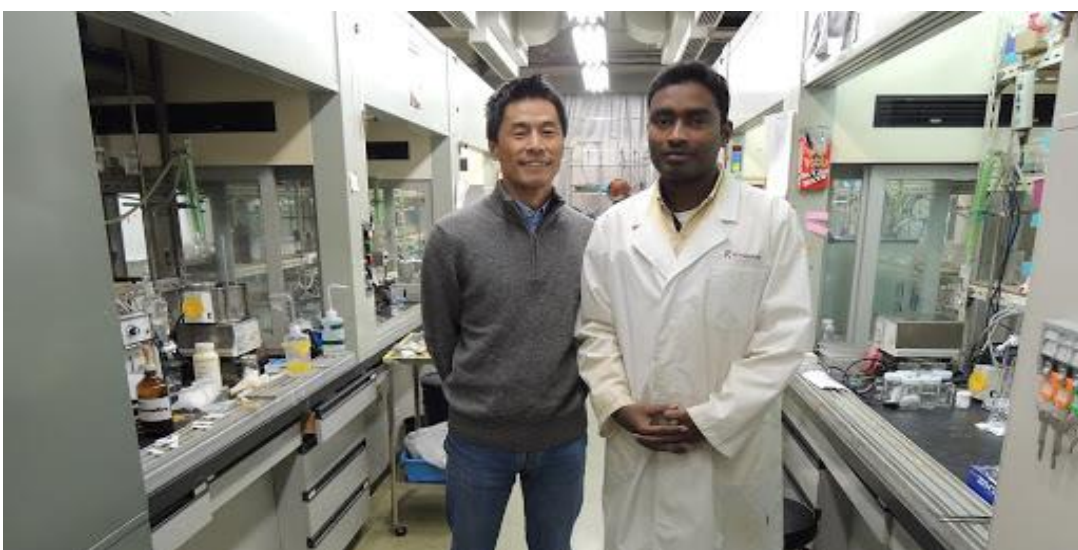
Moulali, and Mr. Nandeshwar Muneshwar Giridhar were visited the RU for multiple times to work on this research problem. Through this intensive collaboration, four master students from RU and one post-Doc from IITH were trained. Besides, Mr. Kumar Siddhant, a master's student from Organometallics Lab, has been selected under the JICA Ph.D. program to investigate this research problem and he has been pursuing his Ph.D. in RU. The outcome of this collaboration includes the additional research collaboration with Prof. Shigeyuki Yamada's lab, KIT, Kyoto, Prof. Nobuyuki Mase's Lab, Shizuoka University, Hamamatsu along with several lectures, several conference presentations, several publications in very high impact peer reviewed journals, the Journal cover page highlight in America Chemical Society, the Best Poster Award, and the workshop on Photo functional Gold Molecules and Nano Materials 2019 (PGMNM2019).

### Some throwback moments exchanged between the two Research Group



*Continued...*





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