# 第202回　OPERA研究交流セミナー
# 第193回　ISIT有機光エレクトロニクス研究特別室セミナー
# 第260回　未来化学創造センターセミナー

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## The Effects of Molecular Modification on Intersystem Crossing for Improved Thermally Activated Delayed Fluorescence


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Since thermally-activated delayed fluorescence (TADF) was first utilised in an OLED in 2012 a large number of molecules have been synthesised that exhibit TADF and make efficient devices. However, deviations from the typical all-organic, multiple-donor acceptor structure are frequent and more work is needed to fully describe the TADF process. Furthermore, limitations on TADF performance remain, including the lifetime of delayed emission in blue emitters and the generation of efficient NIR emission – two topics at different ends of the spectrum, which the Credgington group are addressing. We have demonstrated that heavier elements can enhance the rate of TADF [1] and, recently, we revealed the longest wavelength TADF emitter yet [2].

However, I ask: What questions do we still have today about how to make a TADF emitter efficient? How can we probe the design rules for an efficient TADF emitter through new experimental and computational studies? Where else in the periodic table can we turn in order to boost TADF with heavy atoms?



[1] D. Di, A.S. Romanov, L. Yang, J.M. Richter, J.P.H. Rivett, S. T. E. Jones, T.H. Thomas, M.A. Jalebi, R.H. Friend, M. Linnolahti, M. Bochmann, and D. Credgington. High-performance light-emitting diodes based on carbene-metal-amides. Science. 356, 159 (2017).

[2] D. G. Congrave, B. H. Drummond, P. J. Conaghan, H. Francis, S. T. E. Jones, C. P. Grey, N. C. Greenham, D. Credgington and H. Bronstein. A simple molecular design strategy for delayed fluorescence towards 1000 nm. Submitted. (2019)


**主催：九州大学　最先端有機光エレクトロニクス研究センター**
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