

*Editorial*

# Recognition for PGM Catalysis Contributions

*Platinum Metals Review* Editorial Board member, Dr Thomas J. Colacot (Johnson Matthey, Catalysis and Chiral Technologies, USA), has been awarded the Royal Society of Chemistry (RSC) Applied Catalysis Award 2012. The Award was granted “For exceptional contributions to the development and availability of ligands and catalysts crucial for the advancement of metal-catalysed synthetic organic chemistry” (1–4).

Colacot has been very active in the development and promotion of efficient catalysed syntheses for the chemical and pharmaceutical industries and has successfully commercialised several new catalyst products, as well as publishing widely on the topic of palladium-catalysed cross-coupling. The recent Nobel Prize in Chemistry 2010 justifiably generated much excitement among the catalysis community and Colacot was no exception, publishing an extensive review in collaboration with Professor Victor Snieckus in the prestigious *Angewandte Chemie* (5) as well as a shorter preliminary article in our own journal *Platinum Metals Review* (6).

Among the Colacot research group’s many achievements has been the development of new preformed palladium catalysts to replace the former widely used *in situ* catalysts, as a recent review in *ACS Catalysis* shows (7). These preformed catalysts are more active and selective in a variety of applications and reactions, and can be used to form unique product classes or act upon particularly challenging substrates (8–10). He has also carried out fundamental studies on the action of catalysts for certain challenging reactions (11).

Colacot’s work was instrumental in the commercialisation by Johnson Matthey of well-defined preformed  $L_2Pd(0)$  catalysts (12–14), as well as precatalysts (15), which can be applied in a variety of reaction types and with a variety of substrates, including some of the most challenging.

Many of the catalysts are air stable (9), and a number of the catalyst precursors are also available as solid supported precatalysts, named FibreCat<sup>®</sup> (16–18), which are especially useful to the pharmaceutical industry, where it is crucial that no traces of palladium are left in the active pharmaceutical ingredient (API) product. The ability to filter off the solid supported catalyst can make this easier to achieve.

Both Colacot’s own work and that of his many academic collaborators around the world have created new application areas for the catalysts and procedures that have been made possible. For example, he has developed and commercialised the coupling technologies of Hartwig (15, 19, 20), in addition to the development of Buchwald ligands and precatalysts in commercial quantities. There is much potential for further discovery in this field, with ever more selective and active catalysts yet to be developed that will, it is hoped, bring new possibilities in the transformations that can be achieved, and the products that can be manufactured. The majority of the processes developed in the Colacot group are aimed at sustainability and process economy, if not ‘atom economy’. A few examples are the *in situ* synthesis of  $Pd_2dba_3 \cdot CHCl_3$  (21) and  $L_2Pd(0)$  complexes (13), among others.

Thomas is a Fellow of the Royal Society of Chemistry and has an MBA in addition to his PhD in Chemistry. He can be contacted at: colactj@jmusa.com.

We are very pleased to congratulate Thomas on his Award and hope that our readers will be inspired to make use of preformed palladium catalysts in their own research.

SARA COLES, Assistant Editor

*Platinum Metals Review*

## References

- 1 Royal Society of Chemistry, Applied Catalysis Award 2012 Winner: <http://www.rsc.org/ScienceAndTechnology/Awards/AppliedCatalysisAward/2012-Winner.asp> (Accessed on 26th July 2012)
- 2 L. Wang, *Chem. Eng. News*, 2012, **90**, (30), 39
- 3 *RSC News*, July 2012, p. 8
- 4 *Angew. Chem. Int. Ed.*, 2012, **51**, (37), 9214
- 5 C. C. C. Johansson Seechurn, M. O. Kitching, T. J. Colacot and V. Snieckus, *Angew. Chem. Int. Ed.*, 2012, **51**, (21), 5062
- 6 T. J. Colacot, *Platinum Metals Rev.*, 2011, **55**, (2), 84
- 7 H. Li, C. C. C. Johansson Seechurn and T. J. Colacot, *ACS Catal.*, 2012, **2**, (6), 1147
- 8 G. A. Grasa and T. J. Colacot, *Org. Lett.*, 2007, **9**, (26), 5489
- 9 T. J. Colacot and H. A. Shea, *Org. Lett.*, 2004, **6**, (21), 3731
- 10 G. A. Grasa and T. J. Colacot, *Org. Process Res. Dev.*, 2008, **12**, (3), 522
- 11 C. C. C. Johansson Seechurn, S. L. Parisel and T. J. Colacot, *J. Org. Chem.*, 2011, **76**, (19), 7918
- 12 H. Li, G. A. Grasa and T. J. Colacot, *Org. Lett.*, 2010, **12**, (15), 3332
- 13 T. J. Colacot, G. A. Grasa and H. Li, Johnson Matthey Plc, 'Preparation of a Metal Complex', *World Appl.* 2010/128,316
- 14 T. J. Colacot, *Platinum Metals Rev.*, 2012, **56**, (2), 110
- 15 T. J. Colacot, *Platinum Metals Rev.*, 2009, **53**, (4), 183
- 16 T. J. Colacot, *Top. Catal.*, 2008, **48**, (1–4), 91
- 17 T. J. Colacot, W. A. Carole, B. A. Neide and A. Harad, *Organometallics*, 2008, **27**, (21), 5605
- 18 T. J. Colacot, 'FibreCat', in "e-EROS Encyclopedia of Reagents for Organic Synthesis", eds. L. A. Paquette, D. Crich, P. L. Fuchs and G. Molander, John Wiley & Sons, Ltd, 2009: <http://www.mrw.interscience.wiley.com/eros> (Accessed on 31st July 2012)
- 19 T. J. Colacot, M. W. Hooper and G. A. Grasa, Johnson Matthey Plc, 'Process for the Preparation of Palladium(I) Tri-tert-butylphosphine Bromide Dimer', *World Appl.* 2011/012,889
- 20 T. J. Colacot, C. C. C. Johansson Seechurn and S. L. Parisel, Johnson Matthey Plc, 'Complexes', *World Appl.* 2011/161,451
- 21 T. J. Colacot, Johnson Matthey Plc, 'Process', *World Appl.* 2011/101,665