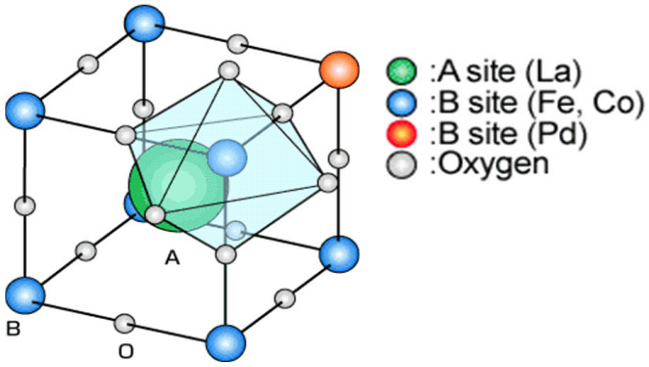
LaPCat™

Perovskite Catalysts

Reaxa offers an exclusive collection of palladium and copper containing LaPCat™ perovskite catalysts for use in a wide range of organic reactions to allow easier, faster and cleaner processes to be developed



Reaxa's LaPCat™ Test Kit

Following an exclusive agreement with Hokko Chemical Industry Co. Ltd (Japan), Reaxa is positioned to transfer the benefits of Hokko's new generation catalysts, created for use in the car industry's latest highly-efficient catalytic converters, to pharmaceutical production. Reaxa's LaPCat™ perovskite catalysts have shown very high catalytic activity in many coupling reactions with a wide variety of substrates.

Cleaner products	typically 10 ppm or less of metal contamination in crude product
Cleaner waste streams	reduced metal losses in LaPCat™ processes
Fast, efficient processes	equivalent or better than homogeneous catalysts
Improved processes	very low catalyst loadings achieved
Improved cost effectiveness	LaPCat™ catalysts may be reused in repeat reaction cycles

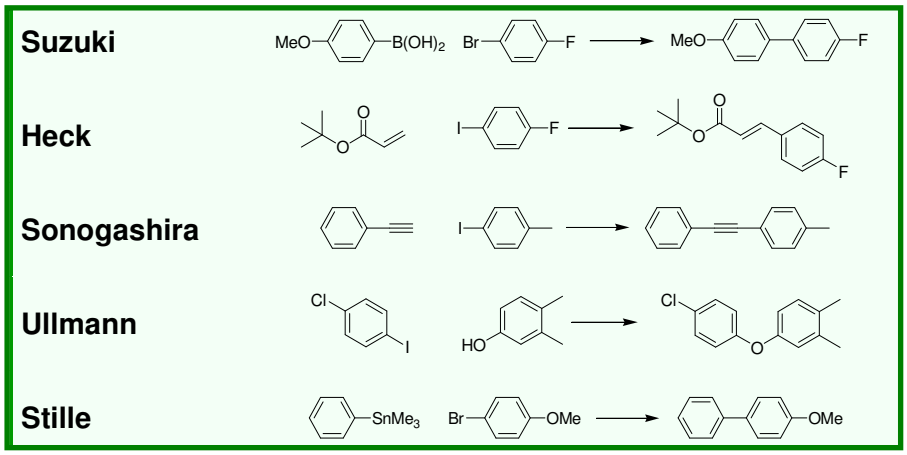
Catalyst	Formulation	Formula Weight	Pd (wt%)	Cu (wt%)	Reactions
FP2	$LaFe_{0.95}Pd_{0.05}O_3$	245.3	2.2	-	Suzuki
FP8	$LaFe_{0.80}Pd_{0.20}O_3$	252.9	8.4	-	Suzuki
CoP	$LaFe_{0.57}Co_{0.38}Pd_{0.05}O_3$	246.5	2.2	-	Suzuki, Stille, Heck, Sonogashira
CuP	$LaFe_{0.57}Cu_{0.38}Pd_{0.05}O_3$	248.2	2.1	8.2	Suzuki, Sonogashira, Ullmann
CoCu	$La_{0.9}Ce_{0.1}Co_{0.60}Cu_{0.40}O_3$	247.8	-	8.6	Ullmann
YBCu	$YBa_2Cu_3O_7$	666.2	-	24.1	Ullmann

LaPCat™ test kit: Reaxa's unique LaPCat™ test kit comprises of 100mg of each perovskite catalyst. A user guide detailing typical conditions and results for a variety of reactions, solvents and substrates is available upon request.

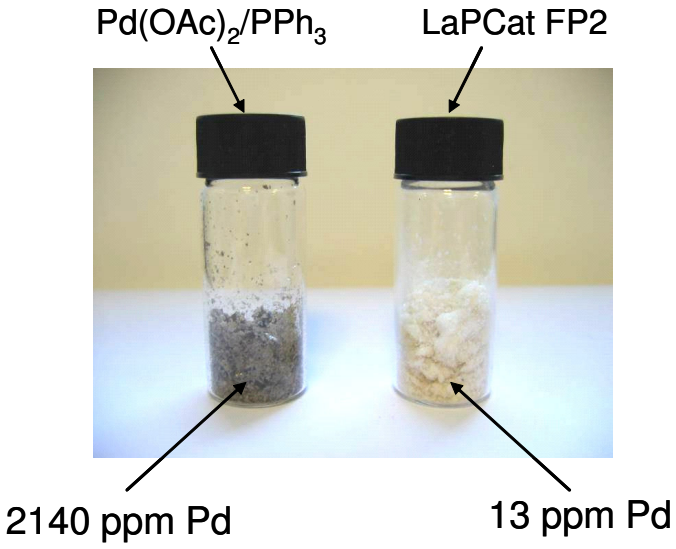
Reaxa

LaPCat™ Applications

Chemistry Examples:



LaPCat™ catalysts have shown high yields and fast reaction times for a wide range of substrates and reaction classes. Very high turnover numbers (up to 400,000) have been shown. Products made with LaPCat™ catalysts have low residual metal contamination in both products and waste streams compared to conventional homogeneous catalyst systems giving major cost and time advantages in simplifying purification procedures as illustrated in the Suzuki coupling example below.



Selected References:

1. Palladium-Containing Perovskites: Recoverable and Reuseable Catalysts for Suzuki Couplings. M.D. Smith, A.F. Stepan, C. Ramarao, P.E. Brennan, S.V. Ley; *Chem. Commun.*, 2003, 2652-3.

2. Heterogeneous or Homogeneous? A Case Study Involving Palladium-Containing Perovskites in the Suzuki Reaction. S.P. Andrews, A.F. Stepan, H. Tanaka, S.V. Ley, M.D. Smith; *Adv. Synth. Catal.*, 2005, **347**, 647-54.

3. Copper and Palladium-Containing Perovskites: Catalysts for the Ullmann and Sonogashira Reactions. S. Lohmann, S.P. Andrews, B.J. Burke, M.D. Smith, J.P. Attfield, H. Tanaka, K. Kaneko, S.V. Ley; *Synlett*, 2005, 1291-5.

For technical support, bulk quotations & information on LaPCat™ catalysts or to order a LaPCat™ test kit please contact: info@reaxa.com

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