SELECTED PUBLICATIONS

Liu, P.; Liu, W.; Li, C.-J. "Catalyst-free and redox-neutral innate trifluoromethylation and alkylation of aromatics enabled by light", J. Am. Chem. Soc. 2017, 139, 14315-14321.

Liu, W.; Yang, X.; Gao, Y.; Li, C.-J, "Simple and efficient generation of aryl radicals from aryl triflates: synthesis of aryl boronates and aryl iodides at room temperature", J. Am. Chem. Soc. 2017, 139, 8621-8627.

Liu, W.; Yang, X.; Zhou, Z.-Z.; Li, C.-J. "Simple and clean photo-induced methylation of heteroarenes with MeOH" Chem, 2017, 2, 688-702.

Li, L.; Wang, Y.; Vanka, S.; Mu, X.; Mi, Z.; Li, C.-J. "Nitrogen photofixation over III-nitride nanowires assisted by ruthenium clusters of low atomicity" Angew. Chem. Int. Ed., 2017, 56, 8701-8705.

Wang, H.; Dai, X.-J.; Li, C.-J. "Aldehydes as alkyl carbanion equivalents for additions to carbonyl compounds", Nature Chemistry, 2017, 9, 374-378.

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THE DEPARTMENT OF CHEMISTRY, QUEEN'S UNIVERSITY & GREENCENTRE CANADA

ARE HONOURED TO HOST THE 7TH ANNUAL GREEN CHEMISTRY LECTURE:

DR. CHAO-JUN LI
DEPARTMENT OF CHEMISTRY
MCGILL UNIVERSITY

CATALYST-FREE AND REDOX-NEUTRAL INNATE TRIFLUOROMETHYLATION AND ALKYLATION OF AROMATICS ENABLED BY LIGHT

FRIDAY, JANUARY 12, 2018
11:30AM
ROOM 117, CHERNOFF HALL

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Abstract

The Minisci alkylation is useful to functionalize aromatics via alkyl radical addition. Current approaches to prepare alkyl radicals follow either oxidative or reductive pathways from various functional groups. Developing new strategy beyond these traditional methods remains elusive yet highly significant. In this article, we present a redox-neutral and catalyst-free protocol to engender alkyl radicals in the context of trifluoromethylation and general alkylation of arenes. This talk, via the Norrish type I concept to produce alkyl radicals, accommodates various functional groups and delivers the product in good yields. This method identified a series of compounds as the trifluoromethylation and alkylation reagents assisted by light. It is expected that these compounds can find potential applications in other radical-involved reactions.

Dr. Chao-Jun Li

Dr. Chao-Jun Li received his Ph.D. at McGill University (1992). He spent 1992-94 as a NSERC Postdoctoral Fellow at Stanford University and was an Assistant (1994), Associate (1998) and Full Professor (2000) at Tulane University. Since 2003, he has been a Canada Research Chair in Green Chemistry and an E. B. Eddy Chair Professor at McGill University, Canada. He served as the founding Co-Chair of the Canadian Green Chemistry and Engineering Network (2009-2016), and currently serves as the Director of CFI Infrastructure for Green Chemistry and Green Chemicals, the Director of NSERC CREATE (Center) for Green Chemistry, and the Co-Director of the FQRNT Center for Green Chemistry and Catalysis. He is the Associate Editor for Green Chemistry (RSC, impact factor=9.1) since 2004. Dr. Li received the US Presidential Green Chemistry Challenge Award (2001), the Canadian Green Chemistry and Engineering Award (2010), and the R. U. Lemieux Award of the Canadian Chemical Society (2015).

He has published >400 peer-reviewed articles, 6 books, and has given >400 plenary/keynote/invited lectures. His current research efforts are to develop Green Chemistry for organic synthesis based upon fundamentally new chemistry that will defy conventional reactivities and possess high "atom-efficiency". Representative well-known researchers include Grignard-type reactions in water, alkyne-aldehyde-amine coupling (A3-coupling), and Cross-Dehydrogenative-Coupling (CDC) reactions among others. His research has been cited widely in the literature (> 34,000 times, h-index=93, google scholar). Recently, he was listed among the "World's Most Influential Scientific Minds" by Thomson Reuters (2014, 2015, 2016, 2017)

Contact

Address
Dr. Chao-Jun Li
Professor, Department of Chemistry
McGill University
436A
801 Sherbrooke St. West
Montréal, Québec H3A 0B8
Email: CJ.Li@McGill.CA
Web Page: http://cjlimcgill.ca/

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