



US 20150065743A1

(19) **United States**

(12) **Patent Application Publication**

Smith, III et al.

(10) **Pub. No.: US 2015/0065743 A1**

(43) **Pub. Date: Mar. 5, 2015**

(54) **METHODS FOR PRODUCING BORYLATED ARENES**

Publication Classification

(71) Applicants: **Dow AgroSciences, LLC**, Indianapolis, IN (US); **Board of Trustees of Michigan State University**, East Lansing, MI (US)

(51) **Int. Cl.**
C07F 5/02 (2006.01)
C07C 67/343 (2006.01)

(72) Inventors: **Milton R. Smith, III**, East Lansing, MI (US); **Robert E. Maleczka, JR.**, East Lansing, MI (US); **Hao Li**, East Lansing, MI (US); **Chathurika Jayasundara**, East Lansing, MI (US); **Jossian Oppenheimer**, Midland, MI (US); **Dmitrijs Sabasovs**, Haslett, MI (US)

(52) **U.S. Cl.**
CPC **C07F 5/025** (2013.01); **C07C 67/343** (2013.01)
USPC **558/288**; 560/102

(21) Appl. No.: **14/478,581**

(57) **ABSTRACT**

(22) Filed: **Sep. 5, 2014**

Methods for the selective borylation of arenes, including arenes substituted with an electron-withdrawing group (e.g., 1-chloro-3-fluoro-2-substituted benzenes) are provided. The methods can be used, in some embodiments, to efficiently and regioselectively prepare borylated arenes without the need for expensive cryogenic reaction conditions.

Related U.S. Application Data

(60) Provisional application No. 61/874,249, filed on Sep. 5, 2013, provisional application No. 62/012,684, filed on Jun. 16, 2014.