

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
3 January 2002 (03.01.2002)

PCT

(10) International Publication Number
WO 02/00574 A3

- (51) International Patent Classification⁷: C07B 37/04, C07F 15/00, C07D 211/14, C07C 209/10, C07D 295/02, 295/08, C07C 41/30, 321/28, C07F 9/50, C07C 67/313
- (74) Agent: BELOPOLSKY, Inna, Y.; E. I. Du Pont De Nemours and Company, Legal Patent Records Center, 1007 Market Street, Wilmington, DE 19898 (US).
- (21) International Application Number: PCT/US01/20291
- (81) Designated States (national): CA, JP.
- (22) International Filing Date: 26 June 2001 (26.06.2001)
- (84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).
- (25) Filing Language: English
- (26) Publication Language: English
- Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (30) Priority Data:
09/602,714 26 June 2000 (26.06.2000) US
60/274,530 9 March 2001 (09.03.2001) US
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- (88) Date of publication of the international search report:
2 May 2002
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



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(54) Title: CATALYSIS USING PHOSPHINE OXIDE AND SULFOXIDE COMPOUNDS

(57) Abstract: Phosphine oxide and sulfoxide compounds were used with transition metals, preferably palladium and nickel, to produce biaryls, arylthiols, arylphosphine oxides and arylamines via cross-coupling reactions with aryl halides and arylboronic acids, aryl Grignard reagents, thiols, phosphine oxides or amines.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/20291

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C07B37/04 C07F15/00 C07D211/14 C07C209/10 C07D295/02
 C07D295/08 C07C41/30 C07C321/28 C07F9/50 C07C67/313

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 C07F C07B C07D C07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
 EPO-Internal, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 01 40147 A (DU PONT) 7 June 2001 (2001-06-07) the whole document	1-16, 33, 34
A	JOHN F HARTWIG ET AL: "Room-Temperature Palladium-Catalyzed Amination of Aryl Bromides and Chlorides and Extended Scope of Aromatic C-N Bond Formation with a Commercial Ligand" JOURNAL OF ORGANIC CHEMISTRY, AMERICAN CHEMICAL SOCIETY, EASTON, US, vol. 64, 23 July 1999 (1999-07-23), pages 5575-5580, XP002149685 ISSN: 0022-3263 the whole document	1, 8, 13, 14, 17, 19, 26, 33, 35

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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- * & * document member of the same patent family

Date of the actual completion of the international search 1 March 2002	Date of mailing of the international search report 11/03/2002
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Diederens, J

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/20291

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WOLFE J P: "A highly active catalyst for the room-temperature amination and Suzuki coupling of aryl chlorides" ANGEWANDTE CHEMIE. INTERNATIONAL EDITION, VERLAG CHEMIE. WEINHEIM, DE, vol. 38, no. 16, 12 August 1999 (1999-08-12), pages 2413-2416, XP002132768 ISSN: 0570-0833 the whole document</p>	<p>1,8,13, 14,17, 19,26, 33,35</p>
A	<p>SUZUKI A: "Recent advances in the cross-coupling reactions of organoboron derivatives with organic electrophiles, 1995-1998" JOURNAL OF ORGANOMETALLIC CHEMISTRY, ELSEVIER-SEQUOIA S.A. LAUSANNE, CH, vol. 576, no. 1-2, 15 March 1999 (1999-03-15), pages 147-168, XP004166281 ISSN: 0022-328X cited in the application the whole document</p>	<p>1,8,13, 14,17, 19,26, 33,35</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/20291

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0140147 A	07-06-2001	US 6124462 A	26-09-2000
		US 6291722 B1	18-09-2001
		WO 0140147 A1	07-06-2001
		WO 0200574 A2	03-01-2002
