



- (51) **International Patent Classification:**
B01J 31/12 (2006.01) *B01J 37/04* (2006.01)
- (21) **International Application Number:**
PCT/US2013/045220
- (22) **International Filing Date:**
11 June 2013 (11.06.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/658,379 11 June 2012 (11.06.2012) US
- (71) **Applicant (for all designated States except US):** **NEW YORK UNIVERSITY** [US/US]; 70 Washington Square, New York, NY 10012 (US).
- (72) **Inventors; and**
- (71) **Applicants (for US only):** **CANARY, James** [US/US]; 4 Washington Square Village, #10DF, New York, NY 10012 (US). **MORTEZAEI, Shahab** [US/US]; 601 E. 11th Street, Apt. 2B, New York, NY 10009 (US).
- (74) **Agents:** **JONES, Shelley A.** et al.; LeClairRyan, 70 Linden Oaks, Suite 210, Rochester, NY 14625 (US).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

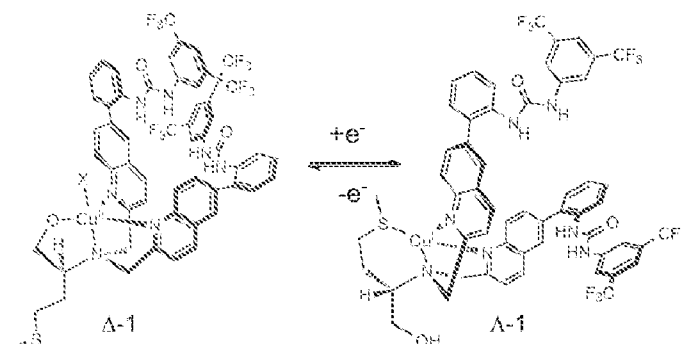
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

- (88) **Date of publication of the international search report:**
10 April 2014

(54) **Title:** ASYMMETRIC CATALYSTS

**Figure 14**

(57) **Abstract:** The present invention relates to asymmetric catalysts, including redox-reconfigurable asymmetric catalysts. Methods of producing compounds having one or more stereocenters using the asymmetric catalysts of the present invention are also disclosed.

A. CLASSIFICATION OF SUBJECT MATTER**B01J 31/12(2006.01)i, B01J 37/04(2006.01)i**

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)

B01J 31/12; B01J 37/04

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: ambidextrous, asymmetric catalyst, stereocenter, chiral, enantiomer, (thio)urea, copper, redox, reduction, oxidation.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MORTEZAEI, SHAHAB et al., "A Redox-Reconfigurable, Ambidextrous Asymmetric Catalyst", J. Am. Chem. Soc., 2012, Vol. 134, pp. 8054-8057. (Published on 02 May 2012) See abstract; Figure 2; Scheme 1; left column, lines 3-10 in page 8055; left column, lines 6-7 in page 8056.	1-35
A	CANARY, JAMES W. et al., "Redox-reconfigurable tripodal coordination complexes: stereodynamic molecular switches", Chem. Commun., 2010, Vol. 46, pp. 5850-5860. See abstract.	1-35
A	DAI, ZHAOHUA et al., "Chiroptical Switches: Applications in Sensing and Catalysis", Molecules, 2012, Vol. 17, pp. 1247-1277. See abstract.	1-35
A	YOU, JING-SONG et al., "Development of a family of b-amino alcohol ligands with two stereocenters for highly efficient enantioselective trimethylsilylcyanation of aldehydes", Chem. Commun., 2000, pp. 1963-1964. See abstract.	1-35



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search

10 February 2014 (10.02.2014)

Date of mailing of the international search report

10 February 2014 (10.02.2014)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
 189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan City,
 302-701, Republic of Korea

Facsimile No. +82-42-472-7140

Authorized officer

KIM, Dong Seok

Telephone No. +82-42-481-8647



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2013/045220

Patent document
cited in search report

Publication
date

Patent family
member(s)

Publication
date

None