



(51) International Patent Classification:

C07C 49/17 (2006.01) *B01J 23/10* (2006.01)
C07C 47/19 (2006.01) *C07B 63/04* (2006.01)
C07C 45/86 (2006.01)

(21) International Application Number:

PCT/US2014/022045

(22) International Filing Date:

7 March 2014 (07.03.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/774,804 8 March 2013 (08.03.2013) US

(71) Applicant: **UNIVERSITY OF CENTRAL FLORIDA
RESEARCH FOUNDATION, INC.** [US/US]; 12201 Re-
search Parkway, Suite 501, Orlando, FL 32826 (US).

(72) Inventor: **BLAIR, Richard, George**; 3043 Moore Drive,
Oviedo, FL 32765 (US).

(74) Agent: **SOROCCO, Douglas, J.**; Dunlap Coddling, P.C.,
PO Box 16370, Oklahoma City, OK 73113-2370 (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, IR, 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, SA,
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))*

(54) Title: RETRO-ALDOL REACTION PRODUCTS AND METHODS OF MAKING AND USING SAME

(57) Abstract: The presently disclosed and/or claimed inventive concept(s) relates generally to retro-aldol reaction products and methods of making and using same. More particularly, but without limitation, the methods disclosed herein for producing the retro-aldol reaction products are performed in a non-aqueous/solvent-free based process. The reaction products obtained from the process include, for example, dihydroxyacetone, glyceraldehyde, glycolaldehyde, and combinations thereof. In one particular embodiment, the process of making such retro-aldol reaction products includes, without limitation, the step of mechanocatalytically reacting a heterogeneous catalyst with one or more sugar reactants.

