

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number  
**WO 2004/058923 A1**

(51) International Patent Classification<sup>7</sup>: **C10G 67/06**

(21) International Application Number:  
PCT/US2003/040322

(22) International Filing Date:  
12 December 2003 (12.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
10/322,417 19 December 2002 (19.12.2002) US

(71) Applicant: **W.R. GRACE & CO.-CONN.** [US/US]; 7500  
Grace Drive, Columbia, MD 21044 (US).

(72) Inventors: **LESEMANN, Marcus, Fredrick, Manfred**;  
Apt. 1034, 105 West 39th Street, Baltimore, MD 21210  
(US). **SETZER, Constanze**; Albanusstrasse 68, D-55128  
Mainz (DE).

(74) Agent: **TROFFKIN, Howard, J.**; W.R. Grace & Co.-  
Conn., 7500 Grace Drive, Columbia, MD 21044 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,  
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**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

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: PROCESS FOR REMOVAL OF NITROGEN CONTAINING CONTAMINANTS FROM GAS OIL FEEDSTREAMS

(57) Abstract: The present invention is directed to the removal of nitrogen and sulfur containing impurities from high molecular weight petroleum feedstock obtained from fluid cracking catalyst or distillation zone of a petroleum treatment plant. The present process comprises first treating C<sub>12</sub> and higher hydrocarbon petroleum feedstock having nitrogen and sulfur containing compounds therein with a porous, particulate adsorbent comprising a silica matrix having an effective amount of metal atoms therein to cause the adsorbent to have Lewis acidity of at least 500 µmol/g and then treating the resultant feedstock to catalytic hydrodesulfurization to produce a hydrocarbon fuel having low sulfur and nitrogen content.



WO 2004/058923 A1