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(21) International Application Number: PCT/GB99/03767 (22) International Filing Date: 11 November 1999 (11.11.99) (30) Priority Data: 09/191,849 12 November 1998 (12.11.98) US (71) Applicants (for all designated States except US): BP CHEMICALS LIMITED [GB/GB]; Britannic House, 1 Finsbury Circus, London EC2M 7BA (GB). LASER CATALYST SYSTEM INC. [US/US]; 11000 Wilshire Boulevard, Box 24314, Los Angeles, CA 90024 (US). (72) Inventor; and (75) Inventor/Applicant (for US only): SENKAN, Selim, Mehmet [US/US]; 1269 Warner Avenue, Los Angeles, CA 90024 (US). (74) Agent: COLLINS, Frances, Mary; BP International Limited, Patents & Agreements, Chertsey Road, Sunbury on Thames, Middlesex TW16 7LN (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.

(54) Title: **METHOD AND APPARATUS FOR SCREENING CATALYST LIBRARIES**

(57) Abstract

Rapid screening for activities and selectivities of catalyst libraries having addressable test sites is achieved by contacting potential catalysts at the test sites with reactant streams forming product plumes at the addressable test sites. The product plumes are screened by translating a sample probe and/or the library to a position that one addressable site is in proximity to the sampling probe sample orifice and passing a portion of the reaction products through the sampling orifice forming a free jet expanded volume in at least one vacuum stage and passing a portion of the cooled and reduced pressure jet stream through an inlet orifice of a mass spectrometer for analysis. The mass spectrometric analysis may be combined with resonance enhanced multiphoton ionization methods of detection for very rapid library evaluation. Suitable reactors, microreactors, and product transfer sample microprobes for product transfer to a mass spectrometer are disclosed.

