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(21) International Application Number: PCT/US97/23734 (22) International Filing Date: 31 December 1997 (31.12.97) (30) Priority Data: 60/034,614 31 December 1996 (31.12.96) US (71) Applicant: EXXON CHEMICAL PATENTS INC. [US/US]; 5200 Bayway Drive, Baytown, TX 77520-5200 (US). (72) Inventors: MCDONALD, Michael, F.; 5634 Spring Lodge, Kingwood, TX 77345 (US). LONG, Robert, L.; 15014 Cobre Valley, Houston, TX 77062 (US). THOMAS, Carl, J.; 4500 Bayway Drive, Baytown, TX 77522 (US). (74) Agents: RUSSELL, Linda, K. et al.; Exxon Chemical Com- pany, P.O. Box 2149, Baytown, TX 77522-2149 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: ON-LINE CONTROL OF A CHEMICAL PROCESS PLANT**(57) Abstract**

A process plant for the manufacture of halobutyl rubber is provided with online monitoring and control of the process parameters to control the properties of the product. It incorporates an in situ measurement system that does not require the removal of any sample material from the process. It uses a Fourier Transform Near Infrared (FTNIR) spectrometer, fiber-optic cables, a viscometer for measuring solution viscosity and a Resistance Temperature Device (RTD) for temperature measurement. An online real-time analyzer system using Constrained Principal Spectral Analysis program predicts the property of the polymer product and provides the process control system with analysis of the data using derived relationships between the physical properties of the polymer and these spectral measurements and measured values of fluid viscosity and temperature. Differences between the predicted and desired property of the product are used to control process parameters. The method can be used for a variety of chemical process plants.