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(21) International Application Number: PCT/US91/05188 (22) International Filing Date: 23 July 1991 (23.07.91) (30) Priority data: 561,100 1 August 1990 (01.08.90) US (71) Applicant: IRON CARBIDE HOLDINGS, LIMITED [US/US]; 3000 Youngfield, Suite 285, Lakewood, CO 80215 (US). (72) Inventors: HAGER, John, P. ; 2054 Crestive Circle, Golden, CO 80401 (US). STEPHENS, Frank, A. ; 6796 Arbutus Street, Arvada, CO 80004 (US). STEPHENS, Frank, M., Jr. ; 12225 West 18th Drive, Lakewood, CO 80215 (US).		(74) Agents: TOMPKINS, Michael, L. et al. ; Sheridan, Ross & McIntosh, One United Bank Center, 1700 Lincoln Street, 35th Floor, Denver, CO 80203 (US). (81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MN, MR (OAPI patent), MW, NL, NL (European patent), NO, PL, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent).	
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A process for controlling the conversion of reactor feed to iron carbide is disclosed. The reactor feed is subjected to a process gas in a fluidized bed reactor (10), and measurements (56) are taken of individual gases in the off-gas from this reaction and the temperature (64) and pressure (66). A stability phase diagram is generated based on the temperature. Different regions of the stability phase diagram are representative of different products being formed by the conversion of the reactor feed. Based on concentrations of the individual gases in the off-gas and the total pressure, a point is plotted on the stability phase diagram indicative of the favored reaction product. The process parameters can then be adjusted to insure that iron carbide can be produced from the reactor feed based on the stability phase diagram.

