

Expression for Reverse Boudouard Reaction in a Mixed Flow Reactor

The sign of Equation 4, of the previous Posting, was changed to produce

$$(F_{A0}/W) \bar{f} = k_f \theta_f(f) - k_f K_{eq_{for}} \theta_b(f) \quad [\text{Eqn 4a}]$$

This Equation 4a was solved for the Reaction Rate, r , at a Temperature of 950 C and a Fractional Conversion, f_A , of 0.7 with a Forward Reaction Rate Constant, k_f , of 0.01 s/mol/kg. These conditions provided a carbon mass in the reaction volume of 401 kg. If you check the attached Reaction Surface plot, this occurs at an r of 8.69E-04 mol/s/kg.

Reaction Rate Surface (kf=1E-2) V1.1.png

