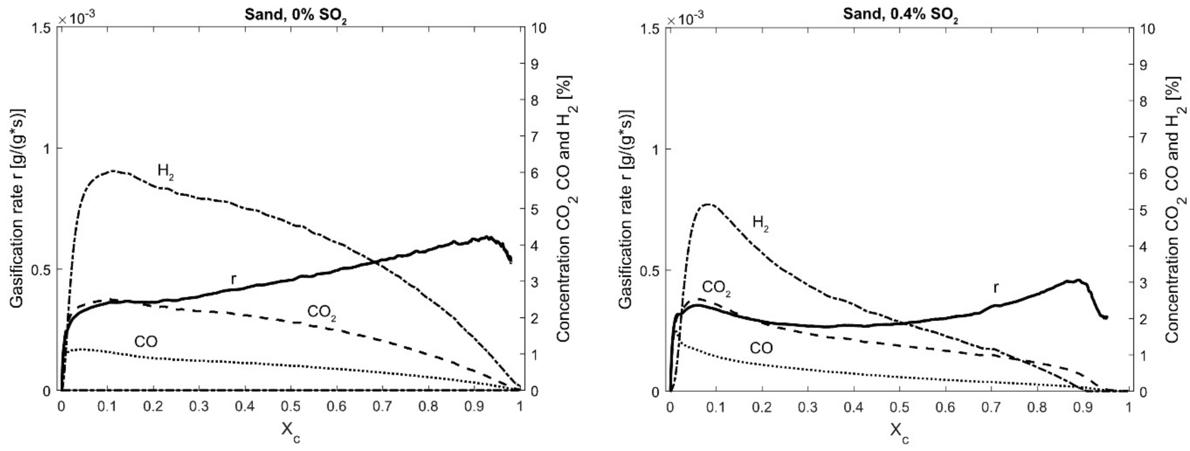

Figure S1. Gasification experiments with sand and devolatilized wood char at 870°C.

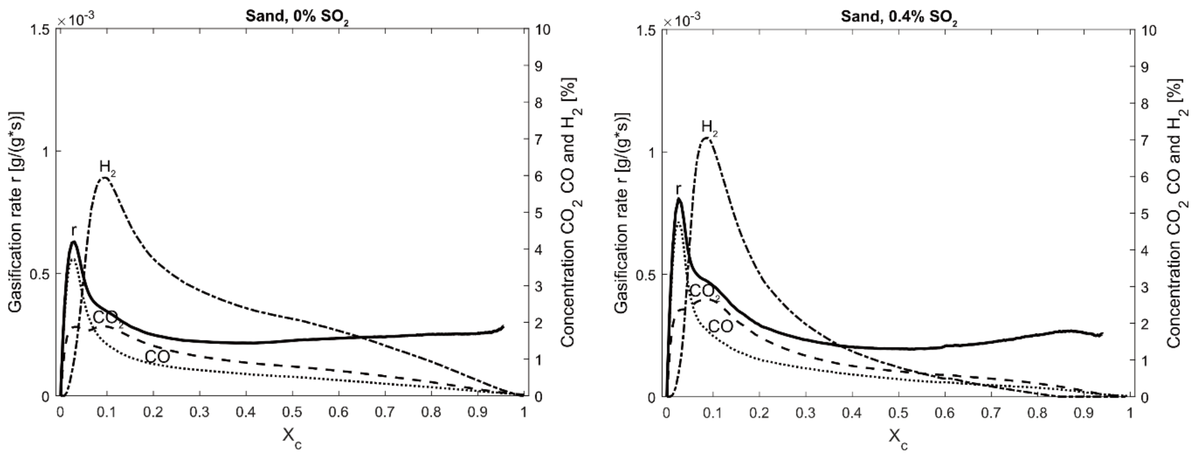

Figure S2. Gasification experiments with sand and german wood char at 870°C. Here a significant volatiles peak can be seen comparing Figure S1 and Figure S2 besides that the reactivity of the devolatilized wood char is slightly higher.

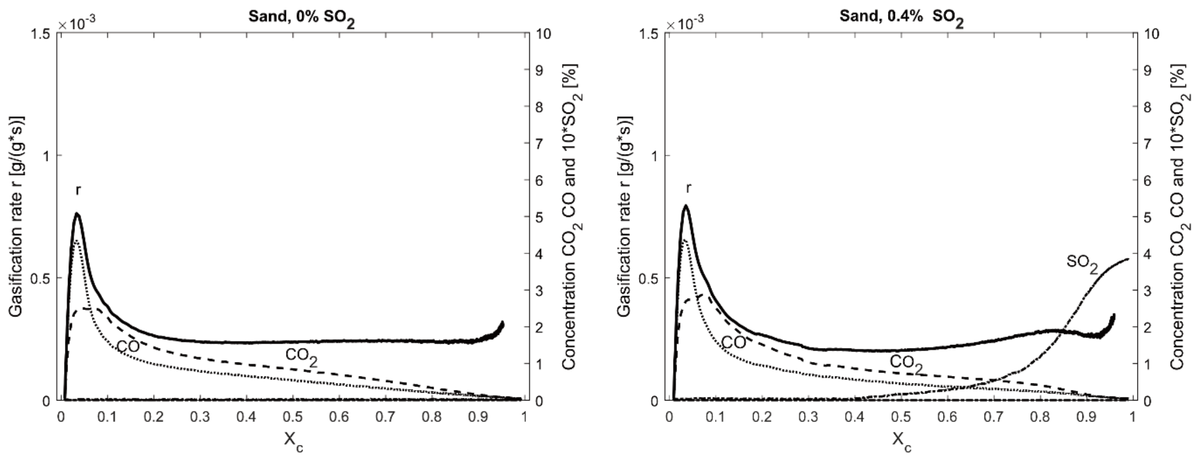

Figure S3. Gasification experiments with sand and german wood char at 870°C using the gas analyzer measuring SO_2 in the outgoing gases.

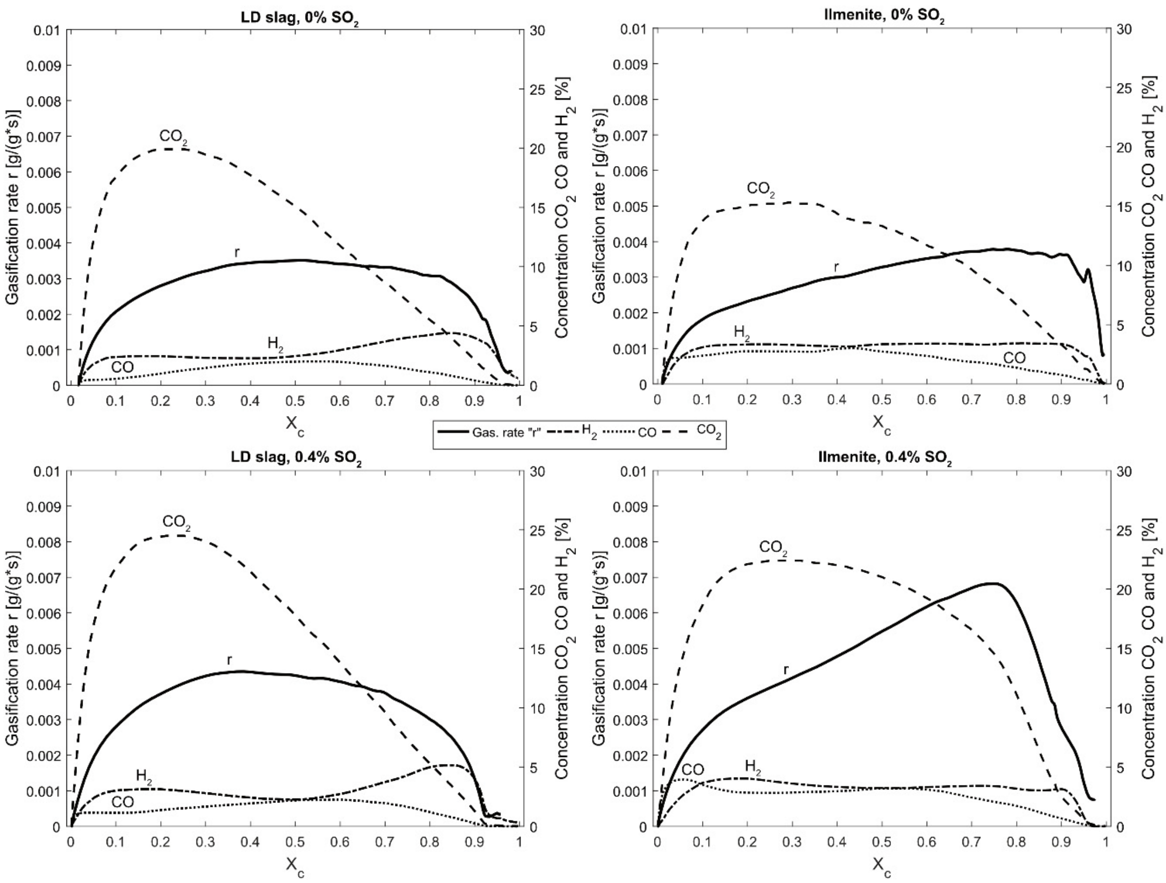

Figure S4. Gasification rate "r" and concentration of outgoing gases as a function of X_c for LD slag and Ilmenite at 970°C. The two upper figures are without the presence of SO_2 and the two lower figures are for experiments using 0.4% SO_2. Curves are selected as the middle curve within the max and minimum gasification rate "r" displayed as gray areas in **Error! Reference source not found.**. Devolatilized wood pellets were used as fuel for these experiments.

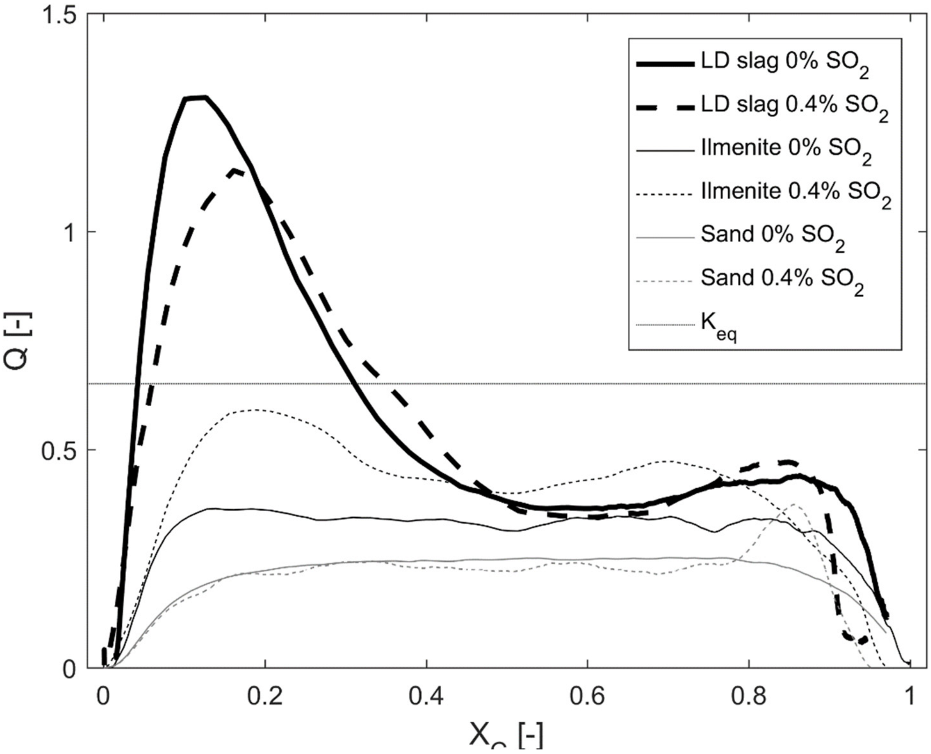

Figure S5. The reaction quotient Q for LD slag, ilmenite and sand with and without the presence of SO_2 in the fluidization gas plotted against the conversion of the ingoing carbon, X_c. Experiments were performed at 970°C using 0.2g fuel. The dotted horizontal line in the figure is the equilibrium constant K_{eq} for the WGS reaction at 970°C.

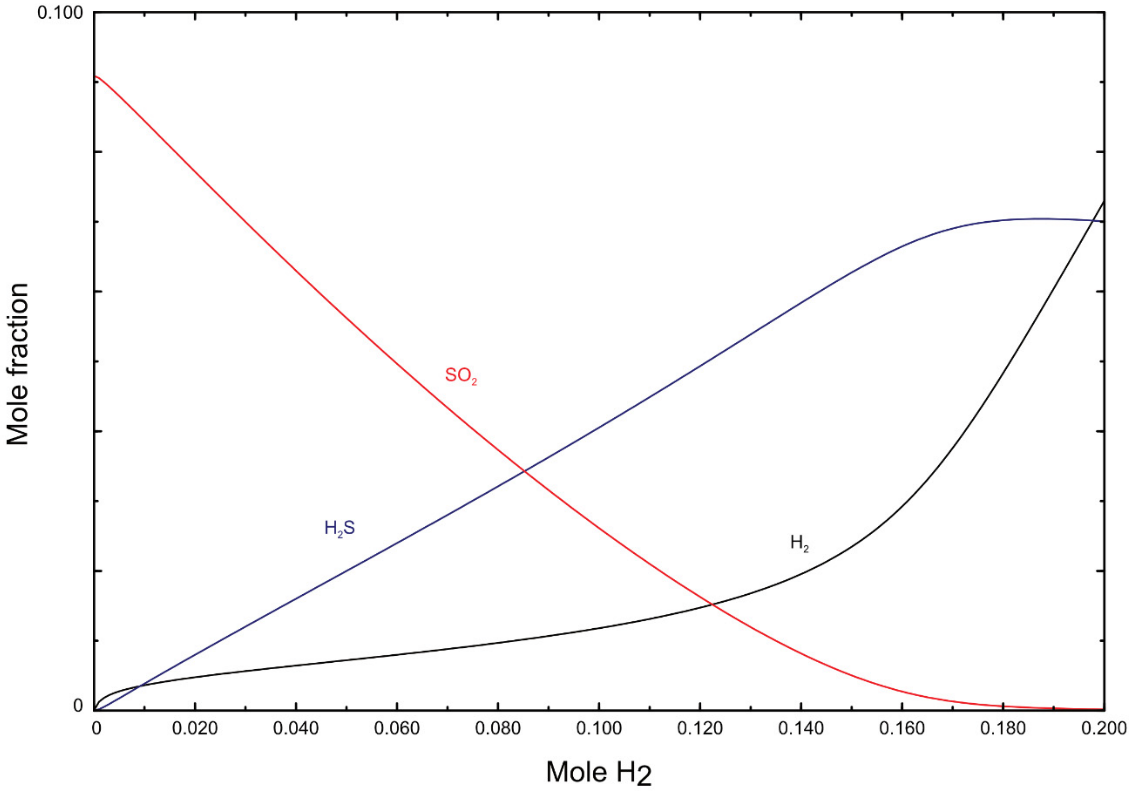

Figure S6. Equilibrium of sulphur species as a function of ingoing amount of H_2. Equilibrium is based on an 0.05 mole SO_2 and 0.5 mole H_2O. It is very simplified to just show the effect of H_2 on the conversion of SO_2 to H_2S at 850°C. If including CO and CO_2 WGS will generate H_2 and this will form H_2S even with no ingoing H_2.

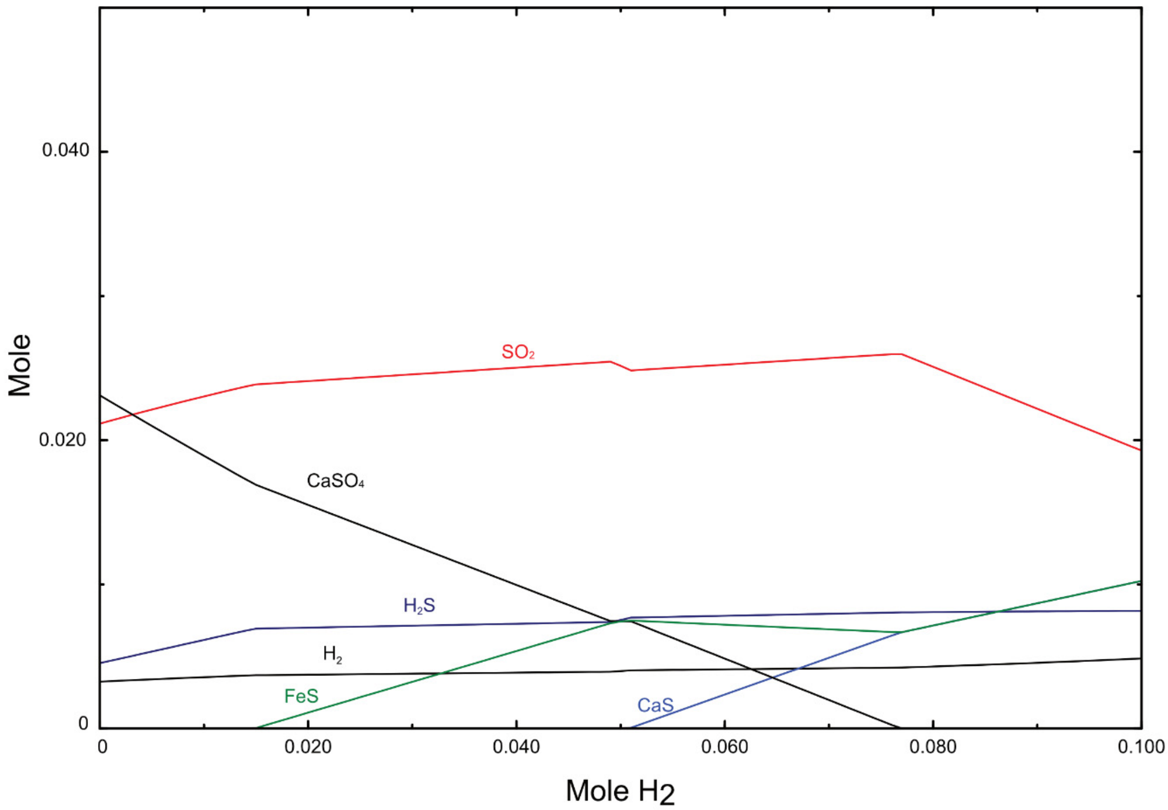

Figure S7. Equilibrium of 0.5 mole $Ca_2Fe_2O_5$ with 0.05 mole SO_2 + 0.5 mole H_2O as a function of mole H_2 at 850°C. This indicates that $CaSO_4$ and CaS can be formed to some extent from $Ca_2Fe_2O_5$ in presence of sulphur.

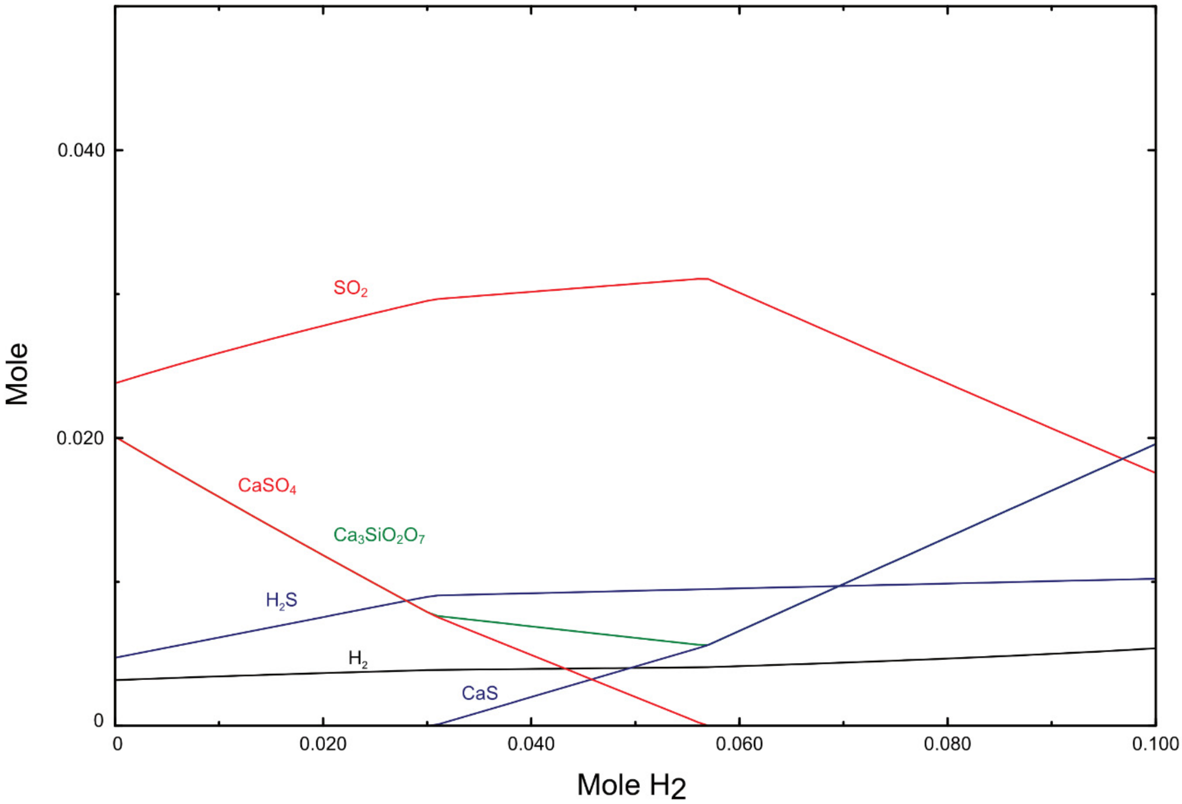

Figure S8. Equilibrium of 0.5 mole Ca_2SiO_4 with 0.05 mole SO_2 + 0.5 mole H_2O as a function of mole H_2 at 850°C. This indicates that $CaSO_4$ and CaS can be formed to some extent from calcium silicates in presence of sulphur.

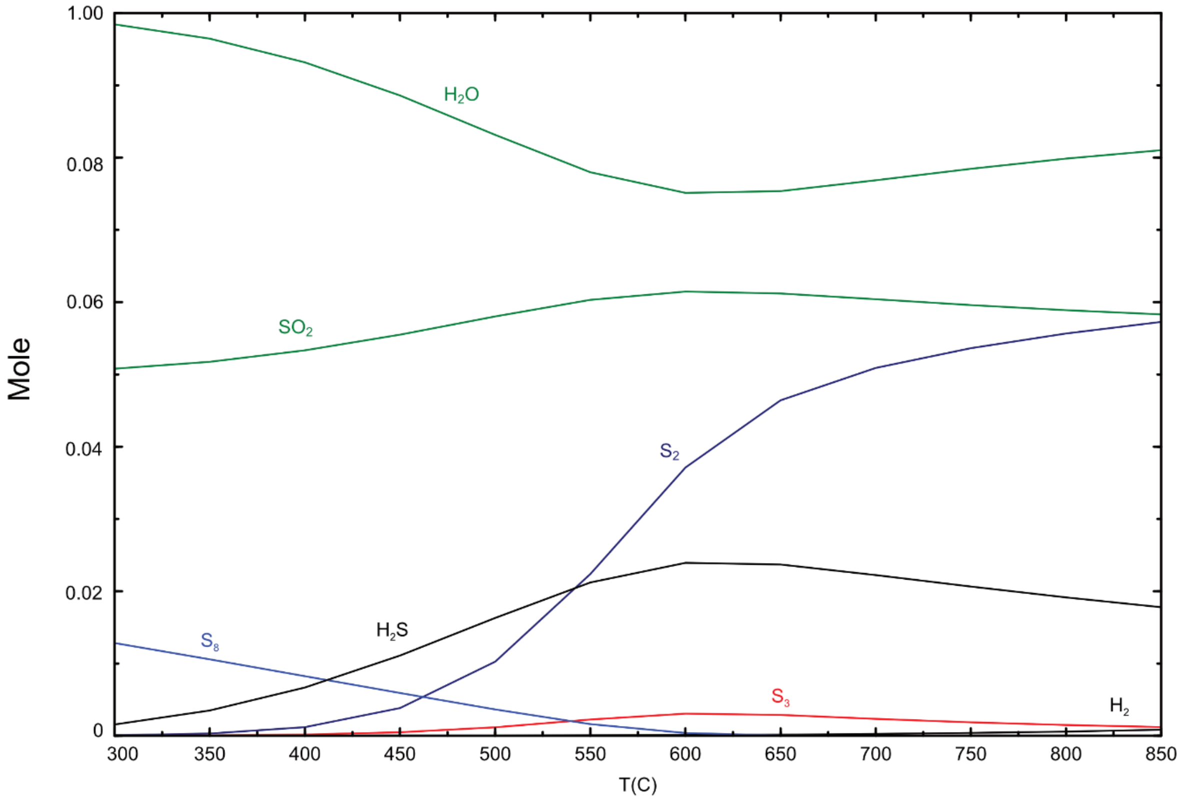

Figure S9. Thermodynamic calculations regarding formation of elementary sulfur that are formed from the Claus reaction when H_2S and SO_2 are present in a gas.

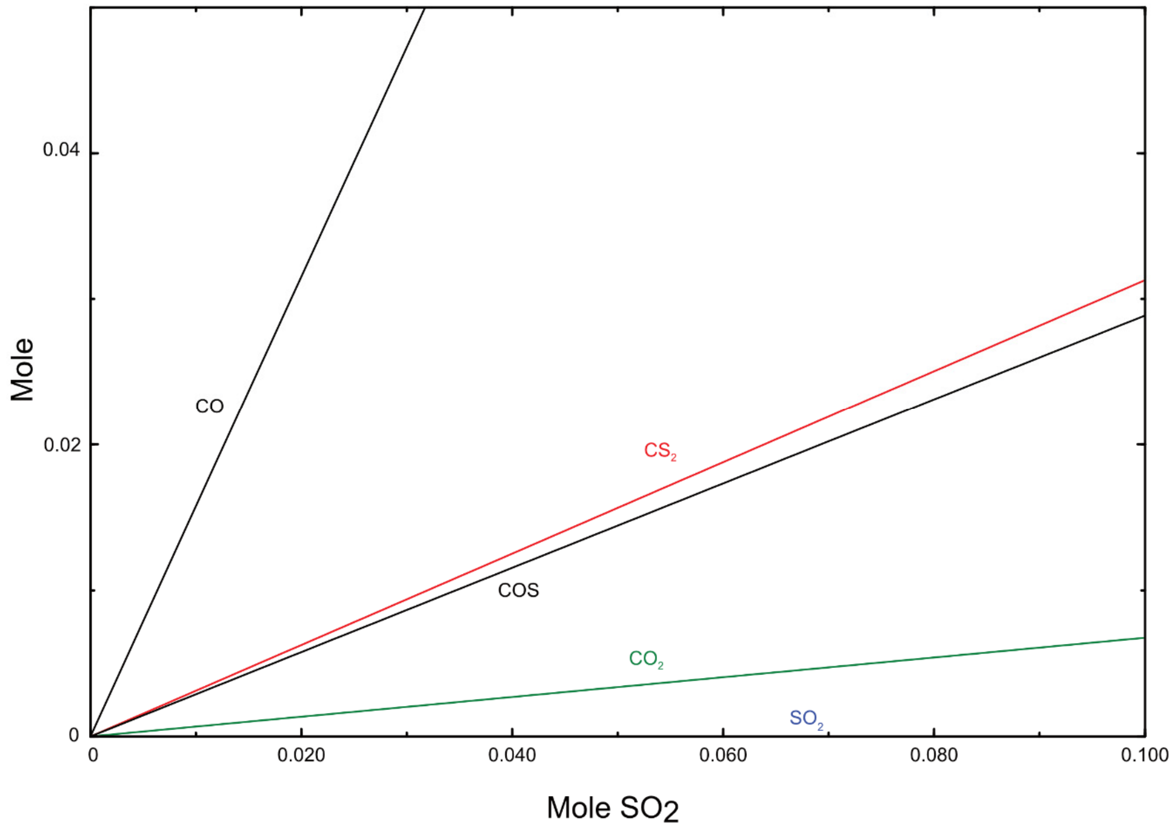

Figure S10. Thermodynamic calculations regarding reactions of SO_2 and C as a function of SO_2 at 850°C. SO_2 are expected to increase the conversion of carbon to both CO and sulfur containing carbon species like CS_2 and COS.

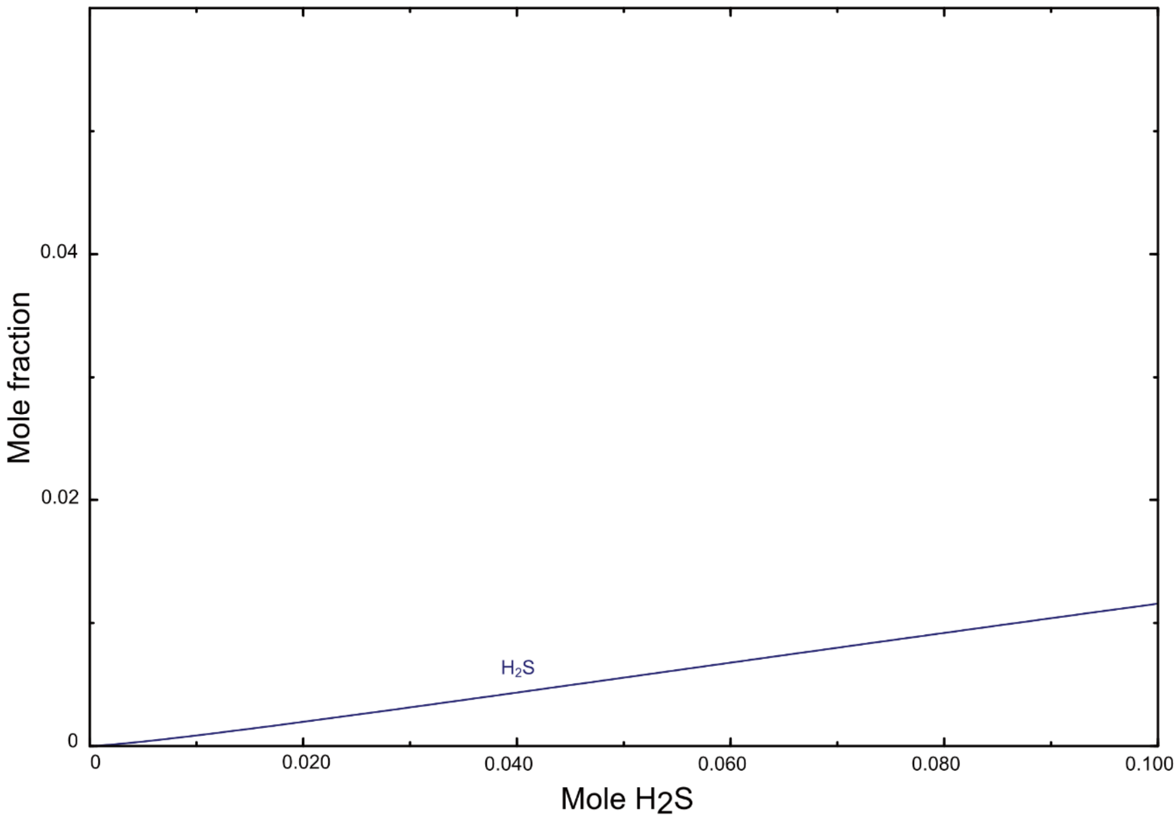

Figure S11. Thermodynamic calculations regarding reactions of H_2S and C as a function of H_2S at 850°C. No conversion of the carbon is expected to occur.