Solid fuel entrained flow gasification is a promising technology for future power generation. In order to understand the chemical and physical processes during gasification, there is a great research interest in the experimental investigation of the gasification reactions under conditions comparable to those in industrial gasifiers. Therefore, at the Institute for Energy Systems of the Technical University of Munich a Pressurized high Temperature Entrained Flow Reactor (PITER) was built up, which is designed for temperatures up to 1800°C and pressures up to 5.0 MPa. The atmosphere in the reactor can be set up in order to carry out pyrolysis experiments in inert atmosphere or gasification experiments with oxygen. Pyrolysis char, which is collected during pyrolysis experiments in the PITER, are analyzed in a High Pressure Thermogravimetric Analyzer (HPTGA) to obtain intrinsic kinetic data. Furthermore, pyrolysis experiments are carried out with a new developed wire mesh reactor. The obtained data can be used for the development of a kinetic model and for model validation. In this work, experiments were conducted with anthracite coal (AC) in the PITER, the HPTGA and the wire mesh reactor. The experiments in the PITER were carried out at temperatures between 1200°C and...
1600°C and pressures between 0.5 MPa and 2.0 MPa. The data show the influences of pressure and temperature on the release of volatiles and on the gasification with oxygen as gasification agent. The data from the wire mesh reactor show the influences of pressure and temperature on the devolatilization. Furthermore, kinetic parameters such as the activation energy and reaction order for the investigated coal are presented in this work.

Kongress- / Buchtitel:  
18 th IFRF MembersConference Flexible and clean fuel conversion in industry

Datum der Konferenz:  
01-03.06.2015

Jahr:  
2015

Revied:  
nein

Sprache:  
en

Publikationsform:  
Print

TUM Einrichtung:  
Lehrstuhl für Energiesysteme

Occurences:  
- Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Energietechnik > Lehrstuhl für Energiesysteme (Prof. Spliehoff) > Publikationen > 2015

entries: