Quasi-equilibrium thermodynamic gasification modeling of biomass with tar formation in fluidized-bed

유시프 다리 이디싸, Ngo Ich Son, 임영일†
한경대학교
(limyi@hknu.ac.kr†)

Researchers have been finding suitable replacements for fossil fuels for the past decades. One of the most promising alternatives till date has been the conversion of biomass into synthetic gas. Modeling of such processes has become essential in order to reduce the cost and time. This study presents a quasi-equilibrium thermodynamic model for biomass gasification where a non-equilibrium factor and a tar formation empirical model were employed. The tar formation empirical model aims to mimic the complex nature of biomass pyrolysis while the non-equilibrium factor represents the influence of pyrolysis on thermodynamic equilibrium of gas phase reactions. The model result was validated with the reported data available in the literature. The model shows a capability to simulate the biomass gasification process for various biomass types.