

ABSTRACT

Disclosed are a turbulent fluidized bed reactor, device and method for preparing para-xylene and co-producing light olefins from methanol and/or dimethyl ether and benzene, resolving or improving the competition problem between an MTO reaction and an alkylation reaction during the process of producing para-xylene and co-producing light olefins from methanol and/or dimethyl ether and benzene, and achieving a synergistic effect between the MTO reaction and the alkylation reaction. By controlling the mass transfer and reaction, competition between the MTO reaction and the alkylation reaction is coordinated and optimized to facilitate a synergistic effect of the two reactions, so that the conversion rate of benzene, the yield of para-xylene, and the selectivity of light olefins are increased. The turbulent fluidized bed reactor comprises a first reactor feed distributor and a plurality of second reactor feed distributors; the first reactor feed distributor and the plurality of second reactor feed distributions are sequentially arranged along the gas flow direction in a reaction zone of the turbulent fluidized bed reactor.