

ABSTRACT

A catalyst structure (1) includes: an iron-based catalyst (2) containing an Fe_5C_2 phase, and at least one of an Fe_2O_3 phase or an Fe_3O_4 phase; and a porous carrier (3) for supporting the iron-based catalyst (2). The catalyst structure (1) configures to synthesize hydrocarbons containing lower olefins. A fixed-bed reactor (110) includes: the catalyst structure (1); and a reaction tube (112) which contains the catalyst structure (1).

FIG. 1