

Abstract

The object of an aspect of the present invention is to provide an environmentally friendly and economically excellent hydrogen production device. Furthermore, the object of an aspect of the present invention is to provide an industrially useful carbon aggregate. A hydrogen production device in accordance with an aspect of the present invention includes: a reactor that includes a filler containing a catalyst for pyrolysis of a hydrocarbon; a gas supply section that supplies, into the reactor, gas containing a hydrocarbon compound; and a microwave irradiation section that irradiates the catalyst with a microwave. The gas supply section supplies the gas at a flow rate at which the filler is fluidized, and hydrogen is generated by the hydrocarbon compound being pyrolyzed in the presence of the catalyst activated by the microwave. A carbon aggregate production device in accordance with an aspect of the present invention includes: a reactor that includes a filler containing a catalyst for pyrolysis of a hydrocarbon; a gas supply section that supplies, to the reactor, gas containing a hydrocarbon compound; and a microwave irradiation section that irradiates the catalyst with a microwave. The gas supply section supplies the gas at a flow rate at which the filler is fluidized, and a carbon aggregate is generated by the hydrocarbon compound being pyrolyzed in the presence of the catalyst activated by the microwave.