

## عنوان مقاله:

Numerical modeling of non-isothermal reduction of a porous wustite pellet with Syngas

## محل انتشار:

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## خلاصه مقاله:

A non-isothermal transient model has been developed to simulate the reduction process and thermal behaviors of a porous wustite pellet undergoing chemical reactions with a mixture of hydrogen, carbon monoxide, water vapor and carbon dioxide which is commonly named Syngas. The model describes the chemical reaction itself, the mass balance for each gaseous species and the energy equation within the pellet. For solution of the governing equations, a Computational Fluid Dynamic (CFD) approach as a fully implicit formulation of Finite Volume Method has been applied. The model has then been validated by comparing with experimental data from literature. Eventually the effects of Syngas and pellet characteristics, as composition, bulk temperature, pellet porosity and pellet diameter, have been investigated on the overall reduction degree of wustite pellet.

## کلمات کلیدی:

Direct reduction iron, Gas-solid reaction, Finite Volume Method, Heat transfer, Wustite pellet, Sponge iron

## لینک ثابت مقاله در پایگاه سیویلیکا:

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