

## عنوان مقاله:

Comparative experimental study between methane partial oxidation and direct cracking of methane for hydrogen production by plasma reactor

## محل انتشار:

سومین کنفرانس هیدروژن و پیل سوختی (سال: 1394)

تعداد صفحات اصل مقاله: 11

## نویسندگان:

Fariborz rashidi - Chemical Engineering Department, Amirkabir University of Technology, Tehran, Iran

mohammad mahdi moshrefi - Chemical Engineering Department, Amirkabir University of Technology, Tehran, Iran

## خلاصه مقاله:

A novel type of plasma reactor, having a rotating ground electrode, was proposed for hydrogen production from methane without a catalyst at room temperature and atmospheric pressure. This plasma reactor with spark discharge has provided an opportunity to compare methane partial oxidation and direct cracking of methane at the same feed temperature and input power. Experiments were carried out to investigate the effects of feed flow rate and feed composition regarding partial oxidation of methane process. In addition, this plasma reactor was employed to examine the reactor performance regarding operating conditions such as feed flow rate and input power in direct cracking of methane process. The results indicated that using O<sub>2</sub> in the feed favors the methane conversion and promotes the formation of hydrogen at low O<sub>2</sub>/CH<sub>4</sub> molar ratio but higher concentration of O<sub>2</sub> in feed decreases hydrogen selectivity due to H<sub>2</sub>O production

## کلمات کلیدی:

methane; hydrogen; plasma; POX; cracking

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/595328>

