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Modeling of Hydrogen Production by Inductively Coupled Methane Plasma for Input Power Pin=700W

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Abstract : Hydrogen occurs naturally in the form of chemical compounds, most often in water and hydrocarbons. The main objective of this study is 2D modeling of hydrogen production in inductively coupled plasma in methane at low pressure. In the present model, we include the motions and the collisions of both neutral and charged particles by considering 19 species (i.e in total ; neutrals, radicals, ions, and electrons), and more than 120 reactions (electron impact with methane, neutral-neutral, neutral-ions and surface reactions). The results show that the rate conversion of methane reach 90% and the hydrogen production is about 30%.

Keywords : hydrogen production, inductively coupled plasma, fluid model, methane plasma
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