355-Nm Photodissociation Of CH4 And Production Ofhydrogen

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Summary

Summary form only given. Methane gas is available as a cheap source for heating purposes as well as for converting into higher hydrocarbons using steam reforming and other processes to produce syn-gas. Research has been directed towards the development of alternative techniques to convert methane into more valuable hydrocarbons such as ethylene and propylene as well as for generation of hydrogen. Hydrogen is forecast to become the major source of energy in future. Molecular hydrogen is a clean burning fuel and can be stored as liquid or gas. The ethylene and propylene are raw materials for producing polyethylene and polypropylene and the demand for these polymers is increasing at an immense growth rate. In spite of many research programs, there is no direct conversion process so far reported which is capable of large scale production of these products from methane which could be described as high yield and highly selective process. At present, there are three different photochemical-process based techniques, which have been used for methane conversion with some degree of success. These include UV light, plasma and microwave irradiation in the presence of different catalyst. To the best of our knowledge, there is no report on photodissociation of methane at 355 nm. The aim of the present study is to develop a technique for direct conversion of methane into hydrogen and higher hydrocarbon and to analyze the regenerated products as a result of laser-photodissociation