

Propane Combustion in an Oxygen Microwave Plasma

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The microwave power was transferred to oxygen by means of a discharge cavity. Hydrocarbon and discharged oxygen were mixed at the cavity output. The flames obtained showed a good stability. After initiated with discharged oxygen the flame can be maintained with non-excited oxygen or with excited oxygen. For the two kinds of flames, axial and radial gas temperature, electron temperature and ionic density profiles were determined. High electron temperature and ionic density were found in flames containing excited oxygen. So it appears that propane combustion in a microwave oxygen plasma produces a large ionic density increase, the ionic concentration reaches a value similar to that obtained in seeded flames.

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