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On the hydrocarbon kinetics in dust producing symmetrically driven rf plasmas JUERGEN ROEPCKE, DMITRY LOPATIK, INP Greifswald, Germany, BRANKICA SIKIMIC, Inst. of Exp. Physics II, Ruhr-Univ. Bochum, Bochum, Germany, FRANK HEMPEL, INP Greifswald, MARK BOEKE, ILIJA STEFANOVIC, Inst. of Exp. Physics II, Ruhr-Univ. Bochum, Bochum, Germany, NADER SADEGHI, Lab. de Spectr. Physique, Université J. Fourier & CNRS, Grenoble, France, JOERG WINTER, Inst. of Exp. Physics II, Ruhr-Univ. Bochum, Bochum, Germany — The chemical phenomena in hydrocarbon containing Ar/He dusty plasmas have been studied combining MIR tuneable diode laser absorption spectroscopy (TDLAS), Fourier transform infra-red (FTIR) and mass spectroscopy (MS) techniques. The experiments were done in a rf cc-coupled parallel plate reactor, f=13.56 MHz. Using TDLAS, the temporal evolution of C_2H_2, C_2H_4, CH_3, CH_4, CO and CO_2 were measured. Simultaneously, FTIR spectroscopy was used to monitor the growth process of the particles whereas MS was used to analyse the exhaust gas. The concentrations of the species were in the range of 10^{10} to 10^{14} molecules cm^{-3}. The change in plasma conditions, in particular the sudden decrease of the electron energy with the disappearance of the dust after it reach a critical size, leads to a reduced degree of dissociation of CH_4, while the density of C_2H_2 is enhanced.

Dmitry Lopatik
INP Greifswald, F.-Hausdorff-Str. 2, Greifswald, Germany

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