Studies of the Glow Discharge, Reactions of Methanol and Ethanol

J. Kaup and O. Eisen

The reaction of methanol and ethanol under glow discharge conditions were studied. All the runs were carried out in a flow system using helium as carrier gas. The radio frequency (13,56 MHz) energy was coupled unductively to the non-equilibrium plasma in a Pyrex tubing. Pressure in the discharge system was 3 Torr. Both, hydrocarbons, such as methane, ethane, acetylene, ethylene, and oxygen containing organic compounds such as aldehydes, acetone, acetale were formed. The conversion of methanol and ethanol approached 47% and 30,7% at 80 W and 59,2% and 61,8% at 120 W, respectively.

From the composition of the reaction products it was assumed, that hydrocarbons C_2 may be formed from alcohol in the electric discharge in two ways, either from the species CH_x and H which occurs mainly in the case of methanol, or by dehydrogenation and dehydroxylation of alcohol without breaking C-C bond.

Dr. J. Kaup
Institute of Chemistry Academy of Sciences
of the Estonian SSR
Acadeemia tee 15
200026 Tallinn
USSR