

Abstract Submitted
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Ignition of hydrocarbon–air mixtures with non–equilibrium plasma at elevated pressures up to 40 bar ALEKSANRD RAKITIN, GUESSEPPE CORREALE, ANDREY STARIKOVSKIY, NEQLAB TEAM — The possibility to control ignition of gaseous combustible mixtures under high pressures (20–40 bar) by (nonequilibrium) SDBD discharge has been shown experimentally in RCM tests. Discharge at high pressure developed as a streamer or as a spark, depending on the conditions and the geometry. SDBD–geometries enabled propagation of long sparks, up to 20 mm, even at high gas densities. The efficiency of nonequilibrium ignition increases towards the range of conditions close to the autoignition threshold. Under the threshold, higher energy input density is required. Under low temperature and low pressure conditions, the nonequilibrium discharge leads to the partial conversion of fuel–air mixture into stable intermediary species which facilitate ignition during the compression afterwards.

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