

Abstract Submitted  
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**Influence of the pulse-periodic discharge on ignition and laminar flame propagation of methane and ethylene** BORIS POTAPKIN, MAXIM DEMINSKY, MARINA STRELKOVA, IRINA CHERNYSHEVA, IGOR KOCHETOV, Kintech Lab, Moscow, Russia, ANATOLII NAPARTOVICH, TRINITI, Troizck, Russia, SEYED SADDOUGH, JOHN T. HERBON, TIMOTHY SOMMERER, GE Global Reseach, Niskayuna, US — Influence of non-equilibrium plasma on ignition and combustion of hydrocarbons are investigated theoretically and experimentally now intensively. In our previous work [1] we have shown that the problem of correct description of influence of non-equilibrium plasma on hydrocarbon combustion can be solved taking into account the effect of active species of plasma on initiation of low-temperature branch of hydrocarbons oxidation. Therefore the development of model where plasma and chemical processes are closely coupled is the key for predictive modeling of such phenomena. The model of pulse-periodic barrier discharge was elaborated and demonstrated reasonable agreement with experiments [2] of ignition of methane and ethylene. Advantages of the non-thermal plasma initiation of combustion over the pure thermal acceleration are discussed.

[1] M. Deminsky et al, ISPC 18, 2009, Bochum, Mechanism of influence of the pulse-periodic discharge on low temperature oxidation of hydrocarbons [2] E. Mintusov et.al, 46th AIAA Aerospace Sciences Meeting, 7 - 10 January 2008, Reno, Nevada, 7, 26, (2009).

Boris Potapkin  
Kintech Lab, Moscow, Russia

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