

Яковенко И.С., Котельников А.Л., Киверин А.Д.

## ВЛИЯНИЕ ДИСПЕРСНЫХ КАПЕЛЬ ВОДЫ НА УСКОРЕНИЕ ПЛАМЕНИ И ПЕРЕХОД К ДЕТОНАЦИИ

- [1] Combustion of emulsion-based foam / Kichatov Boris, Korshunov Alexey, Son Konstantin, and Son Eduard // *Combustion and Flame*. — 2016. — oct. — Vol. 172. — P. 162–172.
- [2] Combustion of hydrogen–oxygen microfoam on the water base / Kichatov Boris, Korshunov Alexey, Kiverin Alexey, and Son Eduard // *International Journal of Hydrogen Energy*. — 2017. — Vol. 42, no. 26. — P. 16866–16876. — Access mode: <http://dx.doi.org/10.1016/j.ijhydene.2017.05.141>.
- [3] Hasegawa T., Fujiwara T. Detonation in oxyhydrogen bubbled liquids // *Symposium (International) on Combustion*. — 1982. — jan. — Vol. 19, no. 1. — P. 675–683. — Access mode: <https://linkinghub.elsevier.com/retrieve/pii/S0082078482802427>.
- [4] Mitropetros K., Hieronymus H., Steinbach J. Single bubble ignition after shock wave impact // *Chemical Engineering Science*. — 2006. — Vol. 61, no. 2. — P. 397–416.
- [5] The ignition dynamics of the water-filled fuel compositions / Egorov Roman I., Antonov Dmitry V., Valiullin Timur R., and Strizhak Pavel A. // *Fuel Processing Technology*. — 2018. — jun. — Vol. 174, no. February. — P. 26–32.
- [6] Boretti Alberto. Water injection in directly injected turbocharged spark ignition engines // *Applied Thermal Engineering*. — 2013. — Vol. 52, no. 1. — P. 62–68.
- [7] Iacobacci Arturo, Marchitto Luca, Valentino Gerardo. Water Injection to Enhance Performance and Emissions of a Turbocharged Gasoline Engine under High Load Condition // *SAE International Journal of Engines*. — 2017. — Vol. 10, no. 3. — P. 928–937.
- [8] Grant G., Brenton J., Drysdale D. Fire suppression by water sprays // *Progress in Energy and Combustion Science*. — 2000. — apr. — Vol. 26, no. 2. — P. 79–130.
- [9] Thomas G. O., Jones A., Edwards M. J. Influence of Water Sprays on Explosion Development in Fuel-Air Mixtures // *Combustion Science and Technology*. — 1991. — nov. — Vol. 80, no. 1-3. — P. 47–61.
- [10] Thomas G. O., Edwards M. J., Edwards D. H. Studies of Detonation Quenching by Water Sprays // *Combustion Science and Technology*. — 1990. — jun. — Vol. 71, no. 4-6. — P. 233–245.
- [11] The influence of water sprays on gas explosions. Part 2: mitigation / van Wingerden Kees, Wilkins Brian, Bakken Jørn, and Pedersen Geir // *Journal of Loss Prevention in the Process Industries*. — 1995. — jan. — Vol. 8, no. 2. — P. 61–70.
- [12] Influence of water mist on flame acceleration, DDT and detonation in H<sub>2</sub>-air mixtures / Boeck L.R., Kink A., Oezdin D., Hasslberger J., and Sattelmayer T. // *International Journal of Hydrogen Energy*. — 2015. — jun. — Vol. 40, no. 21. — P. 6995–7004.
- [13] van Wingerden Kees, Wilkins Brian. The influence of water sprays on gas explosions. Part 1: water-spray-generated turbulence // *Journal of Loss Prevention in the Process Industries*. — 1995. — Vol. 8, no. 2. — P. 53–59.
- [14] An investigation of factors of relevance during explosion suppression by water sprays : Rep. : OTH 94 463 / The University College of Wales ; executor: Thomas, G. O. and Brenton, J. R. — London, UK : 1996.
- [15] Gieras Marian. Flame acceleration due to water droplets action // *Journal of Loss Prevention in the Process Industries*. — 2008. — Vol. 21, no. 4. — P. 472–477.
- [16] Enhancement effects of methane/air explosion caused by water spraying in a sealed vessel / Zhang Pengpeng, Zhou Yihui, Cao Xingyan, Gao Xuliang, and Bi Mingshu // *Journal of Loss Prevention in the Process Industries*. — 2014. — may. — Vol. 29, no. 1. — P. 313–318.
- [17] Microgravity experiments and numerical studies on ethanol/air spray flames / Thimothée Romain, Chauveau Christian, Halter Fabien, Nicoli Colette, Haldenwang Pierre, and Denet Bruno // *Comptes Rendus Mécanique*. — 2017. — jan. — Vol. 345, no. 1. — P. 99–116. — Access mode: <http://dx.doi.org/10.1016/j.crme.2016.10.013><https://linkinghub.elsevier.com/retrieve/pii/S1631072116301103>.
- [18] Yakovenko I. S., Kiverin A. D. Intensification mechanisms of the lean hydrogen-air combustion via addition of suspended micro-droplets of water // *International Journal of Hydrogen Energy*. — 2021. — Vol. 46, no. 1. — P. 1259–1272. — Access mode: <https://doi.org/10.1016/j.ijhydene.2020.09.234>.
- [19] Combustion of heptane-in-water emulsion foamed with hydrogen-oxygen mixture / Kichatov B., Korshunov A., Gubernov V., Kiverin A., and Yakovenko I. // *Fuel Processing Technology*. — 2020. — Vol. 198.
- [20] Kiverin Alexey, Yakovenko Ivan. Numerical Modeling of Combustion and Detonation in Aqueous Foams // *Energies*. — 2021. — Vol. 14, no. 19. — P. 6233.
- [21] Новые алгоритмы вычислительной гидродинамики для многопроцессорных вычислительных комплексов / Головизнин В.М., Зайцев М.А., Карабасов С.А. и Короткин И.А. — 1 изд. — Москва : Издательство Московского Университета, 2013. — ISBN: 978-5-211-06426-3.
- [22] Analysis of transient combustion with the use of contemporary CFD techniques / Bykov V., Kiverin A., Koksharov A., and Yakovenko I. // *Computers & Fluids*. — 2019. — nov. — Vol. 194. — P. 104310.
- [23] An experimental and detailed chemical kinetic modeling study of hydrogen and syngas mixture oxidation at elevated pressures / Kéromnès Alan, Metcalfe Wayne K., Heufer Karl A., Donohoe Nicola, Das Apurba K., Sung Chih-Jen, Herzler Jürgen, Naumann Clemens, Griebel Peter, Mathieu Olivier, Krejci Michael C., Petersen Eric L., Pitz William J., and Curran Henry J. // *Combustion and Flame*. — 2013. — Vol. 160, no. 6. — P. 995–1011.
- [24] Numerical Reactive Gas-dynamics. — <https://github.com/yakovenko-ivan/NRG>.
- [25] Schiller L., Naumann A. A Drag Coefficient Correlation // *Zeitschrift des Vereins Deutscher Ingenieure*. — 1935. —

Vol. 77. — P. 318–320.

- [26] Fire Dynamics Simulator Technical Reference Guide Volume 1: Mathematical Model : Rep. : NIST Special Publication 1018-1 / U.S. Department of Commerce, National Institute of Standards and Technology ; executor: McGrattan Kevin, McDermott Randall, Hostikka Simo et al. — Gaithersburg, MD : 2019.
- [27] Киверин А.Д., Яковенко И.С. О роли локальных эффектов в развитии горения // Физика горения и взрыва. — 2022. — Т. 58, № 3. — С. 32–39.
- [28] Clanet Christophe, Searby Geoffrey. On the “tulip flame” phenomenon // Combustion and Flame. — 1996. — apr. — Vol. 105, no. 1-2. — P. 225–238.