

MODELING OF FLAME PROPAGATION IN PULVERIZED COAL AEROSUSPENSION CONSIDERING DEVOLATILIZATION

K. M. Moiseeva and A. Yu. Krainov

Tomsk State University, 36 Lenin Prosp., Tomsk 634050, Russian Federation

Abstract: In this work, the propagation of the combustion front in aerosol of coal dust is considered. The mathematical model is based on the dual-velocity two-phase model of the reacting medium. The solution method is based on the Godunov method for a gas and the algorithm for the decay of a discontinuity in a dispersed medium of particles containing no own pressure. A parametric study of the problem was carried out with a variation in the percentage of volatiles in particles, as well as in the mass and the radius of particles. The effect of the mass concentration and size of particles and the percentage of volatiles in particles on the propagation velocity of the combustion front in aerosol of coal dust has been demonstrated.

Keywords: coal dust suspension; nanoaerosol; numerical simulation

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Contributors

Moiseeva Kseniya M. (b. 1988) — Candidate of Science (PhD) in physics and mathematics, assistant professor, Department of Mathematical Physics, Tomsk State University, 36 Lenin Prosp., Tomsk 634050, Russian Federation; Moiseeva_KM@t-sk.ru

Krainov Alexey Yu. (b. 1961) — Doctor of Science in physics and mathematics, professor, Department of Mathematical Physics, Tomsk State University, 36 Lenin Prosp., Tomsk 634050, Russian Federation; akrainov@ftf.tsu.ru