

NEW EXPERIMENTAL DATA OF CHILD DROPLETS IDENTIFICATION AFTER TWO-LIQUID DROPLET BREAKUP*

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Abstract: New experimental data of child droplets characteristics (times to puffing/microexplosion, distribution of sizes, and ratio of the evaporation surface area before and after puffing/microexplosion) of heated two-liquid droplets in puffing and microexplosion modes are presented. Different droplet configuration effects (fuel liquid (rapeseed oil) – shell, water–core, *vice versa*) are discussed. The experiments were carried out with two-liquid droplets in which coal particles were added to meet nonpremixed spray technologies into the combustion chambers. Breakup conditions of water/fuel droplets in monodisperse and polydisperse aerosols are determined. The difference in secondary atomization effects of water and fuel is described. The effect of gas temperature in the range 720–1070 K on child droplets characteristics is discussed.

Keywords: group of droplets; composite droplets; microexplosion; secondary droplets; collective effects; shadow photography

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