Diploma thesis abstract by year 6 student Shikunov D.I.

Thermocapillary and evaporating instability of laser-induced surface melt and its numerical simulation with Kuramoto-Sivashinsky equation.

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Described physical mechanism of hydrodinamic instability of relief of laser-induced surface melt with inverted temperature gradient. Given overview of modified Kuramoto-Sivashinsky equation for the modulation of relief of the molten surface layer. Derived dimensionless Kuramoto-Sivashinsky equations for different approximations describing nanojet- and microwcrown-like structures. Numerical simulation of dimensionless equations led to results reproducing experimentally-generated structures in laser-induced melts while excitation regimes match our approximations.