Movie 1

A shadowgraphic movie showing the emission dynamics of thermal plumes near a stable water- FC770 interface (middle dark line). The movie is taken at $Ra\_{LF} = 1.8 \times 10^{11} $ and $Ra\_{LW} = 6.8 \times 10^8$. Similar to Fig. 10 in the main text, the image size is -50 mm ≤ z ≤ 50 mm and -100 mm ≤ x ≤ 100 mm. The movie is played at a speed twice faster than the recoded speed. Because of the large difference in the local Rayleigh numbers, the clod plume emitted from below the liquid interface moves much faster than the warm plumes emitted from above the liquid interface.