

Simultaneous thermal and optical imaging of two-phase flow in a micro-model, Supplementary Material

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1 Spatial Correlation of Thermal and Optical Images

Figure 1 shows how the markers, employed for correlation, are visible both in the optical image (left) and infrared (right) image. Corresponding reference points A to D were identified in the two images and a transformation matrix was calculated.

2 Preparation and removal of entrapped air

Before the start of the experiment, the micro-model had to be saturated with the wetting phase displacing the air completely. Figure 2 shows an image from this step. The two pieces of wire visible are the markers used for image registration. The accompanying video file Movie4.1.avi, shows how some residual air bubbles were removed in order to obtain a fully Fluorinert saturated micro-model at the beginning of the actual experiment.

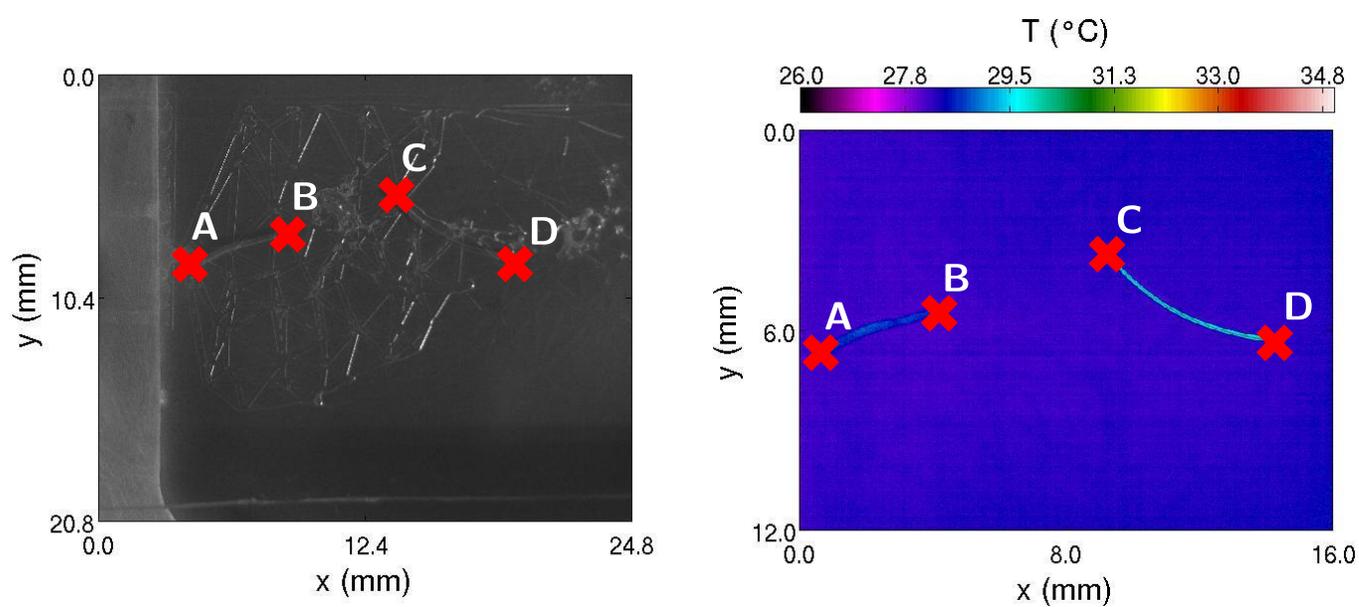


Fig. 1 Optical image of the micro-model with the metallic wires on its surface (**left**), and thermal image of the same part of the micro-model (**right**). The wires have a different color than the background due to the difference in their thermal emissivities.

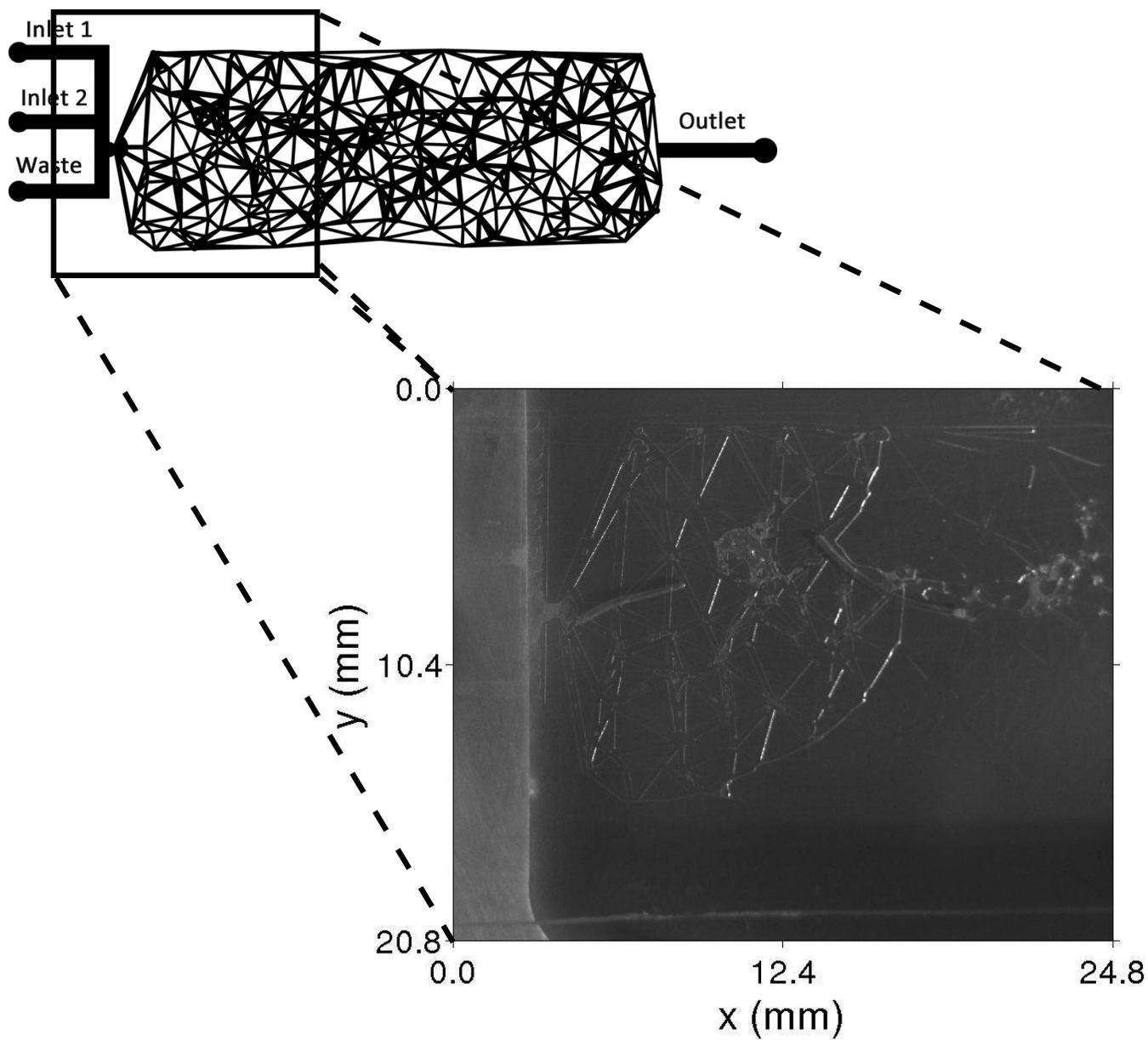


Fig. 2 Saturating the micro-model with Fluorinert. In the accompanying movie (Movie4.1.avi) the initial step of Fluorinert replacing air is shown.