

## **Bubble Ejection from Pulsed Hot Wires**

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We are able to nucleate bubbles in single-phase fluids at high pressure using a brief thermal pulse through an immersed wire. Using high speed video, we observe in some fluids that bubbles are ejected radially from the wire at high speed ( $>10$  cm/s) while in other fluids the bubbles remain affixed to the wire. Bubble ejection is attributed to thermal Marangoni forces arising from the large temperature gradient ( $> 10^7$  K/m) caused by the thermal pulse. In most fluids, surface tension decreases with increasing temperature, causing bubbles to remain near the hot wire. In certain mixtures, however, surface tension increases with increasing temperature causing bubbles to be driven away from the hot wire. Tests with binary alkane mixtures show good agreement between predicted surface tension variation and observed bubble behavior.