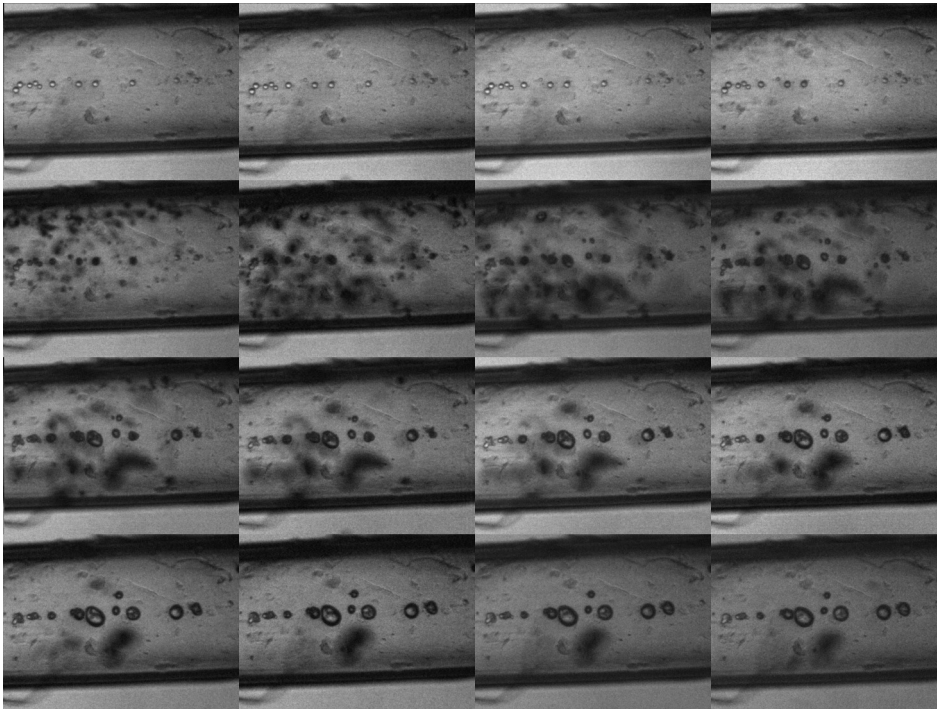




Specialised Imaging

Application Note 6

High speed recording of micro-droplets hit with an ultrasound shockwave



IMAGING PARAMETERS

The SIM02-16 Framing camera looking into an inverted microscope running at 10X magnification giving a horizontal field of view of 800 microns. This related to 1.2 microns per resolution element at the field of view. Back Lighting was supplied from a 300 Joule 25 usec duration point light source F/O coupled to the event. Synchronization was done using the camera's internal delay options. The ultrasonic shock was synchronized using external timing.

EQUIPMENT PARAMETERS

The SIM02-16 was programmed to take a 16 frame sequence with initial delay of 105 usec and interframe times equally spaced at 1 usec and with 1 usec exposures. Gain was set to Gain 3 out of 8. The IMS-300 Joule Flash provided the backlighting.

OVERVIEW OF EXPERIMENT

Micro Droplets in the size of ~20 microns were positioned in a capillary tube in the field of view of the 10X microscope and critically aligned. Timing of the camera and flash lamp were set using the cameras internal time delay options. The ultrasound shock wave was synchronized using external timing. The camera's monitor pulses were used to verify timing using a calibrated oscilloscope.

Results show that the shock wave arrived sometime between frame 3 and 4 shown by the start of the deteriorated shape of the droplets in frame 4. The sequence shows the continued contraction and expansion of the droplets over the recorded period lasting 16 usec.