

High speed photography of wire explosion in the distilled water

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Results of wire explosion experiment in the distilled water are presented. High speed photography was performed using Photron SA-Z high speed camera with the proper illumination. In order to calibrate the camera the metallic ruler was placed in the area between electrodes before the experiment. Shock wave speed and expansion rate of the gas bubble are measured and compared with previously measured [1]. Measured shock wave speed $D=1474\text{m/s}$ is close to the value of 1470m/s obtained in [1] in the same experimental conditions. Depending on the lighting conditions the shock wave appeared as shadow line or a mirror-like reflecting surface moving ahead the gas bubble. So we can conclude that there are no instabilities on the shock wave front at least on the micron scale. Expansion rate of the gas bubble was also measured. It was 750m/s which is twice lower than the shock wave speed. Bubble expanded with constant rate for 3ms after wire explosion, then it starts to decelerate and collapse.

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[1] Bannikova I A, Zubareva A N, Utkin A V, Uvarov S V and Naimark O B
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