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Investigation of bubble dynamics and sonoluminescence in
megasonic fields

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Cavitation bubble motion and bubble structures in water are investigated for standing wave fields in the megasonic range by high-speed imaging. Larger degassing bubbles and small bubbles with high translation speeds can be resolved. Groups of bubbles arrange in lines or arrays, as reported earlier by Miller [Miller, JASA 62, 1977]. Additional, sonoluminescence is measured in overall long-term and phase-resolved (gated) long-term exposures. Several distinct luminescing islands can be detected. The findings seem to be strongly related to the standing wave nature of the pressure field in our setup. Conclusions on bubble distributions and for cleaning applications are drawn.