

**P-28: Dynamics and sonoluminescence
of few bubble systems in phosphoric acid**

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Sonoluminescence of single acoustically driven bubbles has been studied intensively in the last two decades, and one effort was to understand better the multi-bubble systems which are harder to study because of their partly random behavior. Still, the dynamics of isolated single bubbles is different from that of bubbles surrounded by others, and effects of interaction like non-spherical deformations, coalescence and splitting are neglected. Here, we study a system developing from a single bubble into few sonoluminescing bubbles in a small cluster being stable in spatial position and in time up to hours. The liquid is 85% phosphoric acid driven at 23 kHz in a cubical glass cell of 5x5x5 cm³, and the transition could be controlled by driving frequency, amplitude, and gas content. It was possible to observe the cluster bubble dynamics with high-speed photography both in background lighting, and in the dark room, giving information on sonoluminescence. Preliminary results show a big increase of sonoluminescence emission when the transition from single to few bubbles occurred. Further experiments will be done in order to assess the reproducibility of the observations, and to further study the link between single, few, and multi-bubble systems.