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### **Investigation of acoustic cavitation and activation of homogeneous chemical reactions**

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In order to elucidate the mechanisms governing sonochemistry and to extrapolate sonoreactors, we carried out different studies about acoustic cavitation and its effects in an homogeneous medium - the single cavitation bubble was studied theoretically : from its dynamics, conditions of collapse were calculated and concentrations in radicals inside the bubble derived -then the cavitation medium was investigated thanks to hydrophone and two laser techniques (to yield the number, velocities and size distribution of bubbles) - finally, homogeneous reactions of oxidation were studied (phenol, p-nitrophenol, KI,..) in different geometries, globally as well as locally.