

Experimental study of cavitation in a T-mixer reactor for synthesis of nanoparticles

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Our team has been working on the development of new nanomaterials for several years. The initial step in the nanomaterial synthesis is the micromixing, on which depends the properties of the material. Our **T-mixer** reactor has already allowed us to synthesize various nanoparticles of TiO₂, ZrO₂, Ag... Oualha et al. [2] has shown that at large Reynolds number, a vapor phase appears by **cavitation** in the T-mixer reactor. This phenomenon can affect dramatically the properties of the synthesized nanoparticles and it is thus necessary to control the size distribution of vapor bubbles generated by cavitation. To quantify this effect, we made SLS/DLS measurements to establish a relationship between the apparent size of vapor bubble (which is actually measured and depends on the fluid velocity) with their true size. In this work, we have developed a new experimental device, and we optimized the fabrication of T-mixer reactor.