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Sommario/riassunto	This Special Issue scrutinizes the use of ultrasonic-cavitation melt treatment in technology of high-quality metallic alloys with improved mechanical properties, and assesses the driving mechanisms of cavitation-induced effects, such as grain refinement, degassing, wetting, and particle distribution. In this context, the research published in this Special Issue considers the interaction between the cavitation field and acoustic streaming with the melt flow and the suspended solid/liquid phases, the characterization and mapping of cavitation activity in a melt volume, and the possibility of achieving high efficiency in processing large melt volumes through technological approaches for the commercial implementation of ultrasonic processing technology.