

ABSTRACT

The present invention discloses a particle enhancement agent for high intensity focused ultrasound (HIFU) treatment, which can increase acoustic energy deposition at the target location during HIFU treatment. The enhancement agent comprises a discontinuous phase comprised of a core material encapsulated by a membrane-forming material and a continuous phase comprising of aqueous medium. The discontinuous phase is uniformly dispersed in the continuous phase and the particle size of the discontinuous phase ranges from 0.1-8 μ m; the amount of the membrane-forming material in the enhancement agent is 0.1-100g/L; the core material is comprised of a liquid that does not undergo a liquid-gas phase transition at 38-100 $^{\circ}$ C, and the amount of core material in the enhancement agent is 5-200g/L. The particle enhancement agent for HIFU treatment of the present invention can significantly change the acoustic environment of the target location and can increase acoustic energy deposition at the target location during HIFU treatment. Eventually, the ability of clinical HIFU treatment to ablate tumor cells can be significantly improved. Accordingly, the present invention discloses use of a particle enhancement agent for HIFU treatment during HIFU treatment.