

CALL FOR PAPERS

Special Issue on

Histotripsy: approaches, mechanisms, hardware, and applications
(Submission deadline: October 31, 2020)

Histotripsy is a therapeutic ultrasound technology to liquefy tissue into acellular debris using sequences of high-power focused ultrasound pulses. In contrast to high intensity focused ultrasound (HIFU) thermal therapy, the major mechanism of histotripsy is mechanical which enables localized tissue disintegration at the target sites without thermal damage to the overlaying and surrounding tissues. Two major approaches, cavitation histotripsy and boiling histotripsy, with two different mechanisms, have been extensively explored lately. Histotripsy therapy is being evaluated for treating cancer, thrombosis, hematomas, abscess, enhanced immune response, and neurological applications in preclinical studies with small and large animal models. First clinical trials using histotripsy for benign prostatic hyperplasia and liver cancer have been undertaken. In addition to complete tissue liquefaction, a mechanism of a partial mechanical tissue damage is being explored for a broader range of applications such as non-invasive biopsy, drug delivery, and biofabrication. Specialized hardware and software are being developed.

On March 27, 2020, Dr. Charles Cain, who coined the term histotripsy in 2003 and an IEEE fellow and former AE of TUFFC, passed away. With an increasing interest from both basic science and clinical community and in honor of pioneering works of Dr. Cain's, *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control* will organize the first special issue on histotripsy entitled "Histotripsy: approaches, mechanisms, hardware, and applications" to provide a timely platform for dissemination of new findings in this area. This special issue will serve to create a library of peer-reviewed literature on different aspects of histotripsy from mechanisms, software and devices to preclinical and clinical studies. Review articles and original contributions are being sought in a wide range of related topics including, but not limited to, the following:

- 1) New approaches on ultrasound-induced tissue liquefaction or partial tissue damage without contrast agents;
- 2) Mechanisms underlying how histotripsy is delivered and how mechanical tissue damage is induced;
- 3) Simulation tools for modeling ultrasound fields and ultrasound-tissue interaction;
- 4) New ultrasound systems and hardware;
- 5) Histotripsy imaging and control;
- 6) Preclinical and clinical applications.

All contributions should be submitted online via <https://tuffc-ieee.manuscriptcentral.com>, the Manuscript Central system of *IEEE Transactions on UFFC*. When submitting, authors should select Manuscript Type: "Special Issue Papers". In the "Comments to Editor-in-Chief" section, authors should state that the submission is intended for the Special Issue on "Histotripsy: approaches, mechanisms, hardware, and applications", and they should clearly highlight how their manuscript is topically aligned with at least one of the six topics stated above. Instructions for preparation and submission of manuscripts may be found at <https://www.ieee-uffc.org/tr/contrib.pdf>. It is also highly recommended to consult:

<https://ieee-uffc.org/wp-content/uploads/2018/12/Guide-to-Improve-the-Quality-and-Clarity-of-Manuscripts.pdf>.

All manuscripts will be subjected to peer review. Editorial decisions will be made within 21 days of submission. The submission deadline is October 31, 2020. Accepted special issue manuscripts will be published in the *IEEE Transactions on UFFC* in early spring of 2021. The guest editors for this special issue are:

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Prospective authors are encouraged to contact the Editorial Office of the *IEEE Transactions on UFFC* to propose specific submission topics for this special issue. The Associate Editor in Chief leading this special issue is:

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