

SPOTLIGHT ISSUE: CALL FOR PAPERS

Visualizing, Detecting, and Modulating Cellular Functions with Ultrasound

Submission Deadline: January 31, 2025

Visualizing, detecting, and modulating molecular and cellular processes occurring deep within living organisms is fundamental to our understanding of basic biology and disease. Recent advances in the field of biomolecular ultrasound enable scientists to directly interface ultrasound waves with cellular functions such as gene expression. Driven by the discovery and engineering of echogenic gas vesicles, acoustic biosensors, and ultrasound-sensitive channels, this nascent field is poised to transform the biomedical ultrasound field.

To showcase the state-of-the-art in biomolecular ultrasound, a Spotlight Issue entitled “*Visualizing, Detecting, and Modulating Cellular Functions with Ultrasound*” is being organized by the *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*. This issue aims to collect original research, tutorials, full-length reviews, and perspective papers (mini reviews) to promote the publication and dissemination of a wide range of technical knowledge on the theme of ultrasound visualization, detection, and modulation of cellular functions and its associated preclinical applications. Original research manuscripts submitted to this Spotlight Issue are expected to be full-length articles that report new and significant research advances. Specific topics of interest include, but are not limited to, the following:

- 1) Molecular and cellular ultrasound methods:** ultrasound imaging methods and ultrasound-based techniques for molecular and genetic detection.
- 2) Ultrasound-mediated cell function modulation techniques:** sonogenetics for ultrasound modulation of specific cell types such as neurons, T-cells, etc.
- 3) Ultrasound-responsive proteins:** innovations in genetically encoded contrast agents, ultrasound-sensitive channels, and other biomolecular ultrasound-responsive agents.
- 4) Protocols and perspectives of biomolecular ultrasound:** protocol papers to facilitate adoption of biomolecular ultrasound techniques, and reviews/perspectives of recent advances in the field.

All contributions must be submitted online via <https://mc.manuscriptcentral.com/tuffc-ieee>, the Manuscript Central system of *IEEE Transactions on UFFC*. When submitting, authors must select the manuscript type as “Spotlight.” The authors need to distinguish their manuscript from a regular submission. In the “Cover Letter” section, authors should state that the submission is intended for the Spotlight Issue on “*Visualizing, Detecting, and Modulating Cellular Functions with Ultrasound*”, and they should highlight how their manuscript is topically aligned with at least one of the sub-themes described above.

All manuscripts will be peer-reviewed. The submission deadline is January 31, 2025. Potential contributing authors are encouraged to contact the guest editors to propose specific submission topics that are aligned with the scope of this Spotlight Issue. The Guest Editors are:

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