CALL FOR PAPERS

Spotlight Issue on Frontiers in Photoacoustic Imaging

(Submission Deadline: December 15, 2022)

The past decade has produced a sequence of breakthrough contributions in the field of multi-wave imaging involving the use of light and sound. Photoacoustic (PA) imaging is a prime example with major advances in both the optical pathway and the ultrasound pathway. The research community has also witnessed a rapid evolution of PA contrast agents using, for example, phase-change droplets to yield nonlinear PA signal enhancements. These innovations have provided a pathway to high-sensitivity molecular imaging that approaches single-particle sensitivity. While the range of possibilities in the optical pathway design is limited by the applicable physics, various innovations are occurring in the ultrasound signal processing pathway, including more flexible system designs, spectroscopic analysis of PA signals, and the use of artificial intelligence (AI) in the image reconstruction process. Meanwhile, new application domains that exploit PA imaging at the intersection of imaging and therapy / drug delivery (i.e. theranostics) are being established.

To celebrate the past decade of research advances in PA imaging and, in general, multi-wave imaging using light and sound, *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control* is organizing a Spotlight Issue entitled "Frontiers in Photoacoustic Imaging". This Spotlight Issue will serve to give our community a timely update on the latest methodological and translational research achievements on this research theme. Contributions in multiple submission categories (Original Research; Review Papers; Perspectives; Methods and Concepts) are being sought in a wide range of research topics related to the following:

1) Photoacoustic contrast agents, including theranostic agents, molecular imaging probes, and drug carriers.
2) Imaging systems and algorithms, including application-specific hardware design, AI and machine learning methods, and image-guided therapy platforms.
3) Translational studies and application development, including preclinical diagnostic imaging, human pilot studies, cell tracking, and therapy.

Contributions on other frontier research topics in multi-wave imaging using light and sound are also welcomed. Original research manuscripts submitted to this Spotlight Issue are expected to be full-length articles that report new and significant research advances whose feasibility and advantages have been demonstrated experimentally in the respective application areas. Manuscripts that only present theory and simulations without practical experimentation and application demonstrations will not be aligned with the focus of this Spotlight Issue.

All contributions should be submitted online here, the Manuscript Central system of *IEEE Transactions on UFFC*. When submitting, authors should select Manuscript Type: "Spotlight". In the "Cover Letter" section, authors should state that the submission is intended for the Spotlight Issue on Frontiers in Photoacoustic Imaging, and they should highlight how their manuscript is topically aligned with the scope of the Spotlight Issue stated above. Guidelines for improving quality and clarity of manuscripts may be found here.

All manuscripts will be subjected to fast-track peer review. Editorial decisions will strive to be made within 30 days of submission. The submission deadline is December 15, 2022. Accepted manuscripts will be published in the *IEEE Transactions on UFFC* in the second quarter of 2023. The guest editors for this Spotlight Issue are:

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