

# CALL FOR PAPERS

## Spotlight Issue on Recent Advances in Medical Ultrasound Array Design (Submission deadline: April 30, 2022)

Since the 1970s, when portable transducer arrays were first introduced for medical ultrasound imaging, array design techniques have undergone quick and significant developments. Often encouraged by the growing needs for high diagnostic/therapeutic efficacy and for new fields of applications, the development of advanced arrays has been an active research topic with ever-challenging and ambitious technical requirements (e.g., reduced size, improved sensitivity, increased/reduced number of elements, wide bandwidth, high output power). Concurrently, the need for arrays with increased performance has pushed progress in transducer technologies, microelectronics, and array layout designs. Nowadays, representative examples can be found for both 2-D and 3-D applications such as high intensity focused ultrasound arrays, very high frequency or dual frequency probes, kerf-less arrays, 2-D sparse arrays, and probes embedding application-specific integrated circuits. The emergence of these advanced arrays has, in turn, stimulated the development of novel, *ad hoc*, transmission/reception approaches, image reconstruction algorithms, and data recovery strategies to exploit or deal with the peculiarities of the specific array.

*IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control* is organizing a spotlight issue entitled “Recent Advances in Medical Ultrasound Array Design” to provide a timely platform for rapid dissemination of new findings in this area. The spotlight issue will serve to create a library of peer-reviewed literature describing the latest and prospective advances in ultrasound array design. Contributions in multiple submission categories (Original Research; Review Papers; Methods and Concepts) are being sought in a wide range of related topics including, but not limited to, the following:

- 1) Novel array designs, including array optimization techniques
- 2) Application-specific array transducers, for extracorporeal, endoscopic, or interventional applications
- 3) Interfacing system electronics for new arrays
- 4) Imaging algorithms for new array designs, including data recovery strategies for sparse arrays and specialized beamformers
- 5) Experimental use and applications of new array designs, including acoustic field characterization, phantom studies, and in-vivo investigations

The main objective of this spotlight issue is to establish a central resource point for researchers to disseminate and learn about the latest and prospective advances in ultrasound array design. Note: The fabrication of micromachined ultrasonic transducers is not within the scope of this spotlight issue. Prospective authors working on this topic are encouraged to submit to the *IEEE Open Journal of Ultrasonics, Ferroelectrics, and Frequency Control* [“Special Issue on “Micromachined Ultrasonic Transducers”](#).

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 Recent Advances in Medical Ultrasound Array Design, 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 at <https://iee-uffc.org/publication/t-uffc/manuscript-guidelines>.

All manuscripts will be subjected to fast-track peer review. Editorial decisions will be made within 20 days of submission. The submission deadline is April 30, 2022. Accepted manuscripts will be published in the *IEEE Transactions on UFFC* in the Fall of 2022. The guest editors for this special issue are:

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