

CALL FOR PAPERS

Special Issue on Air-Coupled Ultrasound

(Submission deadline: **January 31, 2024**)

Air-coupled ultrasound is a challenging field dominated by the drastic impedance mismatch between air and all condensed matter, the low ultrasound velocity in the air and the rapidly increasing attenuation with frequency. These factors severely limit the applicability of air-coupled ultrasound; however, the potential is enormous. Ongoing research in this field continues to advance in the understanding of novel transduction systems and in the optimization of existing ones, by incorporating novel materials and designs. The emergence of improved transduction systems with better sensitivity, lower noise levels, wider bandwidth, higher frequency, lower cost, smaller size and lower power consumption together with innovative signal processing and analysis methods enables improvement of existing applications of air-coupled ultrasound in many different fields and, what is more interesting, the proposal of fully innovative use cases.

The *IEEE Open Journal on Ultrasonics, Ferroelectrics and Frequency Control (OJ-UFFC)* invites submission of manuscripts on Air-Coupled Ultrasound that fall within the scope of the UFFC Society. This special issue seeks contributions from authors who are engaged in transducers design, optimization and manufacturing, dedicated electronic systems and signal processing methods and their use in different applications. This includes theoretical development, optimization methods, inverse problem solution, numerical modeling, experimental techniques, manufacturing techniques and applications. Review articles and original contributions are sought in a wide range of topics including, but not limited to, the following:

- Bulk piezoelectric transducers incorporating novel passive or active materials and/or novel matching strategies, air-coupled arrays and phased arrays.
- MEMS transducers, PMUT and CMUT (materials, design, optimization, etc.) and alternative transduction mechanisms.
- Gas-coupled transducers.
- Advances in air-coupled ultrasound applications in NDT, flow measurements, industrial control, range measurements, materials characterization, food quality control, communications, agriculture, cultural heritage, etc.
- Novel applications: biomedical diagnosis, IoT, gesture recognition, haptics, wearables, non-linear sensing, etc.
- Application of AI techniques for air-coupled ultrasound.

All contributions should be submitted online via <https://mc.manuscriptcentral.com/oj-uffc/>, the Manuscript Central System of *IEEE Open Journal on UFFC*. When submitting, authors should state in the cover letter that the submission is intended for the Special Issue on “Air-Coupled Ultrasound” and they should clearly highlight how their manuscript is topically aligned with this area.

All manuscripts will be subjected to peer review. The submission deadline is **January 31, 2024**. Special issue manuscripts will be published in the *IEEE Open Journal on Ultrasonics, Ferroelectrics and Frequency Control* as soon as they are accepted. The guest editors for this special issue are:

Mate Gaal
BAM, Berlin, Germany
E-mail: mate.gaal@bam.de

Tomás Gomez Alvarez-Arenas
CSIC, Madrid, Spain
E-mail: t.gomez@csic.es