

## THERMOACOUSTICS FOR ENERGY CONVERSION SYSTEMS

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### PROPOSAL

The field of thermoacoustics bridges the gap between thermal sciences and acoustics, exploring how thermal energy can be converted to sound and vice versa. If a temperature difference is imposed along a well-design porous material, within an acoustic resonator or a feedback tube, spontaneous oscillations, that can be converted into electricity, occur. On the other hand, if acoustic power is provided to the system, a temperature difference can be generated across the porous material [1]. Electricity and cooling generation can be incredibly efficient and environmentally friendly, as it can utilize waste heat or renewable heat sources, reducing the reliance on fossil fuels or chemical refrigerants that are harmful to the environment. Similarly, in cryocooling, thermoacoustic systems offer a promising alternative to traditional refrigeration methods, particularly in applications requiring very low temperatures, such as liquefying gases or space applications [2], [3]. This interdisciplinary session on thermoacoustics aims to spotlight the latest innovations, address current challenges, and discuss future applications of thermoacoustic technologies in the energy sector. Topics of the present mini-symposium include but are not limited to:

- Thermoacoustic engines and refrigerators;
- Thermoacoustic energy harvesting applications;
- Advanced modelling of thermoacoustic devices;
- Single component modelling: stacks, regenerator, heat exchangers, acoustic to electricity converters

### REFERENCES

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