



NATO SPS MYP G6006

Workshop: Advanced Characterization of Acoustic Materials and Fire Performance

Organized within the framework of the NATO Science for Peace and Security Programme.

Place: Hotel "Tami Residence", Niš, Durmitorska prilaz 1, Serbia

6 – 7 April 2026.

Online: <https://teams.microsoft.com/meet/38031127677053?p=5sV1XehFkAtNXgLqGZ>

Meeting ID: 380 311 276 770 53

Passcode: YA2Np7yh

Workshop Description

The workshop *Advanced Characterization of Acoustic Materials and Fire Performance* is designed as a specialized training and knowledge-transfer activity aimed at strengthening research capacities of young scientists and early-career researchers working in the fields of acoustic materials and fire safety engineering.

The main objective of the workshop is to provide participants with an in-depth understanding of advanced experimental and analytical methods used for the characterization of acoustic materials and the evaluation of their fire performance. The programme focuses on state-of-the-art laboratory techniques for determining acoustic properties of materials, including sound absorption measurements using impedance tube systems based on the transfer function method, determination of acoustic parameters using transfer matrix approaches, and measurements of the sound absorption coefficient under anechoic conditions.

In addition to acoustic characterization, the workshop addresses the fire safety performance of acoustic materials, including the regulatory framework and classification procedures according to EN 13501-1. Participants will be introduced to the principles of calorimetric test methods and the interpretation of key parameters used for assessing the behaviour of materials under fire exposure.

The workshop combines expert lectures with laboratory demonstrations, enabling participants to gain practical insight into modern measurement techniques, experimental setups, and data analysis procedures. By integrating acoustic characterization with fire performance evaluation, the workshop contributes to the development of comprehensive approaches for the design and assessment of innovative acoustic materials that meet both acoustic efficiency and fire safety requirements.

Workshop Objectives

The main objectives of the workshop are:

- To provide advanced training for young researchers in modern experimental methods for the acoustic characterization of materials.
- To introduce participants to standardized techniques for measuring sound absorption and determining acoustic parameters of porous and composite materials.
- To present current approaches for evaluating the fire performance of acoustic materials, including reaction-to-fire classification procedures and calorimetric testing principles.
- To strengthen interdisciplinary competencies by integrating knowledge from acoustic engineering and fire safety engineering.
- To promote knowledge exchange and scientific collaboration between partner institutions and invited experts.

Expected Outcomes

The workshop is expected to achieve the following outcomes:

- Improved technical knowledge of young researchers in the field of acoustic material testing and fire performance evaluation.
- Enhanced practical skills in the use of advanced laboratory equipment and experimental methods for acoustic measurements.
- Increased understanding of the relationship between material structure, acoustic efficiency, and fire safety behaviour.
- Strengthened collaboration and networking among researchers from participating institutions.
- Dissemination of methodological approaches and experimental practices relevant to the development of innovative acoustic materials.

Target Audience

The workshop is primarily intended for young researchers, early-stage scientists, and graduate students engaged in the fields of acoustic materials, material science, and fire safety engineering. Participants from project partner institutions, as well as other interested researchers and professionals working on the development, testing, or optimization of acoustic and multifunctional building materials, are welcome. The workshop is particularly suitable for those seeking to gain hands-on experience with advanced experimental methods and standardized testing protocols.

Training Approach

The training will combine theoretical lectures with practical laboratory demonstrations, ensuring an effective balance between conceptual understanding and hands-on experience. Expert instructors from the project consortium, as well as invited specialists, will guide participants through:

- Standardized measurement methods for acoustic characterization, including the transfer function and transfer matrix approaches, and impedance tube testing under anechoic conditions.
- Experimental procedures for evaluating fire performance, including reaction-to-fire classification, calorimetric testing, and interpretation of key fire-related parameters.
- Analysis, interpretation, and documentation of experimental results to ensure reproducibility, traceability, and methodological rigor.

Interactive discussions, practical exercises, and collaborative problem-solving sessions will be integrated throughout the workshop to promote knowledge transfer, methodological harmonization, and interdisciplinary collaboration. By participating in these activities, attendees will develop both the technical competencies and the collaborative skills necessary to advance research in multifunctional acoustic materials.

Workshop Programme

Day 1 – 6 April 2026

- 09:00 – 10:00 Registration and welcome refreshments
- 10:00 – 10:10 Opening remarks – Iankov Roumen & Momir Prašćević
- 10:10 – 11:00 Dejan Ćirić
Measurement of the Sound Absorption Coefficient under Anechoic Conditions
- 11:00 – 12:00 Branko Radičević
Acoustic Characterization and Structural Optimization of Porous Materials and Their Mixtures
- 12:00 – 12:30 Coffee break
- 12:30 – 13:15 Petar Jovanović
Determination of Acoustic Material Properties Using the Transfer Function Method
- 13:15 – 14:00 Petar Jovanović
Determination of Acoustic Material Properties Using the Transfer Matrix Method
- 14:00 – 15:30 Lunch
- 16:00 – 18:00 Laboratory Session
Demonstration of experimental techniques including:
 - Transfer Function Method (impedance tube measurements)
 - Transfer Matrix Method (impedance tube measurements)
 - Semi-arc setup for measuring the sound absorption coefficient under anechoic conditions

Day 2 – 7 April 2026

- 09:00 – 10:00 Registration and welcome refreshments
- 10:00 – 10:10 Opening remarks – Iankov Roumen & Momir Prašćević
- 10:10 – 11:00 Darko Zigar
Application of Advanced Computational Simulation Tools in Fire Safety Engineering
- 11:00 – 12:00 Milan Protić
Fire Safety Requirements for Acoustic Materials: EN 13501-1 Classification and Principles of Key Calorimetric Test Methods
- 12:00 – 12:30 Coffee break
- 12:30 – 14:00 Nikola Mišić
Experimental Analysis of Fire Performance of Acoustic Materials: Measured Parameters and Practical Outcomes
- 14:00 – 15:30 Lunch
- 16:00 – 18:00 Laboratory Session
Demonstration of experimental procedures for evaluating the fire performance of acoustic materials, including measurement techniques, interpretation of test parameters, and discussion of practical testing outcomes.