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The 2025 I-INCE Practice of Noise Control School

For Students and Other Young Professionals Registered at Inter-Noise 2024 Congress
(By Invitation Only. If you are interested in attending, email senos@itu.edu.tr)
Sunday 24th August, 2025, 10:00am-1:30pm

10:00am-10:15am Sign-In and Introduction

10:15am-11:15am
Noise Control Projects in Transportation, Renewable Energy Systems, and Community Planning
Dana Lodico, PE, INCE Bd. Cert., Dudek, Denver, Colorado, USA

11:15am-12:15pm
Sound Quality Testing
Patricia Davies, Emeritus Professor of Mechanical Engineering, Ray W. Herrick Labs., Purdue University, USA.

12:15pm-1:15pm
Acoustics Modeling of Porous Granular Material and its Application in Noise Control
Tongyang Shi, Professor of Institute of Acoustics, Chinese Academy of Sciences, China

1:15pm-1:30pm Closing Remarks and Photographs

Session 1: 10:15am-11:15am

Dana Lodico, PE, INCE Bd. Cert., Dudek, Denver, Colorado, USA

Bio: Dana Lodico is a Senior Acoustician with 25 years of professional experience in noise control and vibration consulting. She has expertise in a wide range of acoustical- and vibration-related technical areas, and is a nationally recognized expert in tire pavement, ground transportation, energy generation, and environmental noise. She has 14 publications and more than 50 conference proceedings and presentations in the field of acoustics covering research topics such as complex wind turbine monitoring surveys, innovative sound barriers, quiet pavement evaluations, meteorological effects on traffic noise, noise impacts on wildlife, truck noise source localization using acoustic beam forming, thermo-acoustic refrigeration design, and classroom acoustics. She has successfully managed projects ranging from acoustic studies of outdoor concert venues to large, high-profile highway noise studies in metropolitan areas and has substantial experience with expert testimony handling examinations in judicial and quasi-judicial settings. Dana is a Professional Engineer and Board Certified in Noise Control Engineering. She is a Vice President of I-INCE and recently accepted the position of Incoming President / Executive Vice President of INCE-USA, which will begin in October.

Noise Control Projects in Transportation, Renewable Energy Systems, and Community Planning

Summary: A well designed project takes into consideration both the use of the project and how its use might affect the surrounding communities. Dana will describe the role of acoustical consultants in the planning, design, permitting, and post-construction phases of development projects and in addressing and solving acoustical problems as they arise. She will discuss potential noise and land-use conflicts and methods of reducing noise impacts to communities. Topics may include wind turbines, roadways, outdoor concert venues, recreational uses, and industry.

Session 2: 11:15am-12:15pm

Patricia Davies, Emeritus Professor of Mechanical Engineering, Ray W. Herrick Labs., Purdue University, USA. Former INCE/USA President 2007-2009, and I-INCE VP for Technical Activities 2018-2023.

Bio: Prof. Davies joined Purdue in 1987 after completing her Ph.D. at the Institute of Sound and Vibration Research at the University of Southampton in the UK. She was Director of the Ray W. Herrick Laboratories 2005-2019. Herrick Labs. started in 1958 specifically to have graduate students involved in research sponsored by industry. Part of her research is focused on the development of models to predict how people perceive and are affected by machinery noise. Such models can be coupled with machinery sound prediction models and used to optimize machinery sound design. In this research she has collaborated with colleagues in hearing sciences and psychology, and much of this research has been funded by industry. She is a fellow of INCE/USA and of the Acoustical Society of America. She received ASME's Per Brüel Gold Medal for Noise and Vibration in 2016.

Sound Quality Testing

Summary: The processes we use to prepare for subjective tests, which are conducted to understand how different sound attributes affect people's perception of sounds, will be described. While the loudness of the sound is usually very important, other attributes can also be important, particularly when comparing sounds of similar types of products made by different manufacturers. Sets of measurements alone are usually insufficient to develop models of customers' perceptions of product sound. Having identified sound attributes of importance, we would like to vary the strengths of sound attributes in a controlled manner so we can determine how perception of the overall quality of the sound is affected by different sound attribute strengths. This requires an ability to synthesize sounds so that product experts cannot tell whether they are listening to a sound recording or a simulated sound. Some examples of sound preparation for subjective tests and subsequent test results will be given.

Session 3: 12:15pm-1:15pm

Tongyang Shi, Professor of Institute of Acoustics, Chinese Academy of Sciences, China

Bio: Prof. Shi graduated from Purdue University in 2019 and worked for 3M Company in Minnesota from 2019 to 2022. During his time in 3M, collaborating with other colleagues, he developed the new multifunctional acoustics material FAM, which was successfully launched in 2021. Prof. Shi joined the Institute of Acoustics, Chinese Academy of Sciences in 2022, and his research interest is in acoustics material, acoustics holography, structure vibration.

Acoustics Modeling of Porous Granular Material and its Application in Noise Control

Summary: Granular porous materials such as activated carbon have drawn increasing attention due to their good sound absorption performance at low frequency. However, some unique acoustic behaviors have been observed during sound absorption measurements of granular porous materials in impedance tubes: i.e., circumferential edge-constraint effects, level-dependent absorption behavior, etc. To explain these observations, a 1-dimensional poro-elastic model was first applied to describe the sound propagation in granules stacked in a cylindrical sample holder, as in a standing wave tube. Then this model was extended to a 2-dimensional finite difference (2DFD) model with depth-dependent stiffness of the granule stack. The model was validated with the measurements of the granular porous materials, and it was found that the 2DFD model is a powerful tool to characterize the granular materials, and provide a tool to design acoustics material.