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Multi-disciplinary Seminar Series

AGORA 2022

National Seminar Series

Sree Narayana College, Kollam
Affiliated to University of Kerala
NAAC 'A' Grade, ARIIA All India Rank II

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Editors

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Chief Editor's Message

The 'AGORA National Seminar Series' is an annual event showcasing the social, scientific and technological activities of research and academic communities of all types of organizations and institutes across the country. The major purpose of this seminar series is to spread the knowledge in various subjects across different departments of the college so as to enrich the inter-disciplinary culture in the entire campus. AGORA series is being conducted by coordinating different departments of S. N. College, Kollam to disseminate knowledge to the entire academic community. AGORA 2022 has succeeded in bringing many luminaries in science and arts subjects with its research together with main focus within the college to deliberate and debate on the recent advances in various subjects. The proceedings of AGORA 2022 being published now will certainly go a long way to enlighten researches and teachers in their pursuit of knowledge. Let the outcome of these deliberations engender commendable results and kindle genuine spirit of enquiry and research.

Prof. Dr. Nisha J. Tharayil

(Principal, S. N. College, Kollam)

Editor's Message

It is our great pleasure to welcome you to this issue of the Proceedings of the Multi-disciplinary Seminar Series of Sree Narayana College, Kollam - AGORA 2022 which showcases the social, scientific and technological activities of research and academic communities of all types of organizations and institutes across the country. AGORA 2022 mainly focuses on the contributions from the research community in a multi-disciplinary and interdisciplinary aspect. The seminar brought together students, researchers and educators of varied domains to share their ideas, views and also to explore their technical abilities.

This issue contains papers accepted over single iterations of the review process. We would like to express my gratitude to the Chief Editor and other expert members for their sustained support to make the launch of this 'Proceedings' possible. We also acknowledge the authors themselves, without whose expert input there would have been no AGORA seminar series. Their efforts made a great contribution to its success.

Dr. P. Nikhil Chandra

(Assistant Professor, Chemistry)

Dr. S. Jisha

(Associate Professor, Zoology)

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03

Modelling of Micro Perforated Panels Using Maa's Theory

Sreeja. R[1], Premlet. B[2], and Roxy.M.S[2]

[1]Maharajas College (A Government Autonomous College),
Eranakulum, Kerala 683104, India
S.N. College, Kollam, Kerala 69 1001, India.
sreeja.prasanth@gmail.com
Phone: 91 9605083896

Abstract

Passive and Active Methods of noise controlling are relevant in this particular modern world of fast industrial and technological developments. Noise and vibration produced as a result of these developments adversely affect the living and nonliving world simultaneously. Low frequency noise below 500Hz is being efficiently controlled by Active noise controlling methods. The passive acoustic absorbers are less efficient in this low frequency region. In this article modelling of Micro Perforated Panel based passed passive acoustic absorbers is being done based on Maa's theory. It is established through this modeling studies that they are efficient in controlling low frequency and high frequency noise simultaneously. The geometrical parameters of MPP plays a significant role in determining its performance. The main geometrical parameters of the MPP of importance are its peroration diameter, air cavity length, separation between the perforations and the thickness. The above parameters in suitable combination can be optimized for the efficient performance of the MPP in controlling the noise in the required frequency region of interest. Acoustic absorption coefficient close to 0.99 is achieved even at the very low frequency region close to 375Hz for the optimized values of geometrical parameters of the MPP. This modelling study clearly establishes that MPP can be used instead of the active noise controllers and the conventional porous acoustic absorbers. Thus the MPP absorber is a challenging candidate for addressing the noise controlling problem.

Key words: MPP,Passive Absorber,Activeabsorber,Acoustic Absorption Coefficient