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Investigating the parameters affecting the graphene thermoacoustic speaker

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Abstract

Thermoacoustic speakers are a new generation of speakers that have come to the attention of the scientific community in recent years. These speakers have various applications in the industry due to the lack of use of vibrating parts in sound production and the need for a magnet. Due to the newness of the topic, the need to conduct theoretical studies in this field is felt severely. In response to this need, in this paper, a theoretical approach for investigating the effect of different variables on the performance of a heat sink speaker (thermoacoustic) has been used. The results are very useful for choosing the optimal structure of the acoustic speakers, and determine the amount of different quantities such as thickness, dimensions, electrical input power, substrate type, activity atmosphere and the shape of the sound pressure field for the heat-producing material in the heat sink speaker. Another result of this theoretical approach is to obtain a spectral acoustic pressure range at various frequencies from 1 Hz to 1 megahertz for the speaker at various distances.

Keywords: Thermoacoustic loudspeaker, Graphene, Thermoacoustics.

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