Optimal Design and Manufacture of Miniature Flat-Panel Speakers Stiffened by Nano-Carbon Tube Composites

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ABSTRACT

The main object of this paper is developed a miniature flat-panel speakers stiffened by nano-carbon tube composites which are low frequency sound quality, smooth curve of sound pressure, and reduce the decay rate of high frequency sounds. The several standard of flat-panel speakers stiffened including the 30mm×18mm×7mm、40mm×14mm×7mm and 50mm×14mm×7mm. The paper is used the ANSYS software to solved the sound curve in flat-panel speakers stiffened and used optimal theory to solved optimal manufacture parameters (including the thickness ratio of flat-panel speaker and nano-carbon tubes that in the same weight, boundary condition and spring constant of suspension system, vibration area and location) which make the sound pressure value curve is smooth in global frequency. The flat-panel speakers stiffened which is developed by this project can reach the goals of economize electric power, maximum bearing, the low-frequency had powerful voices and the high-frequency had a better clarity. According to the best results of manufacture parameters, the materials and molds of suspension system are choused to manufacture suspension systems and fabricate miniature flat-panel speakers stiffened. The experimental and optimal methods are presented to study the optimal sound pressure curve of flat-panel speaker. The optimal methods proved to be accuracy.

Keywords : Suspension system ; flat-panel speaker ; nano-carbon ; optimal ; sound quality ; manufacture parameters ; design ; system

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