Effect of Length and Porosity on the Acoustic Performance of Concentric Tube Resonators

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Abstract

The acoustic performance of acoustically short Concentric Tube Resonator (CTR) is analyzed in terms of the length to diameter (L/D) ratio and the porosity. A three dimensional model is built using the acoustic module of COMSOL Multiphysics®. The accuracy of the predicted Transmission Loss (TL) result is validated with experimental results reported in the literature. Finally, an empirical formula is given to estimate the optimum porosity for a given L/D ratio to achieve wide band TL performance.

Reference

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Figures used in the abstract

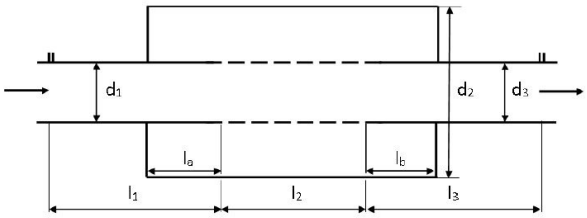

Figure 1: Concentric Tube Resonator.