VISITOR RESEARCH REPORT

Visitor Name: **Professor Junhong Park**

Area of Research: ***Finite Element Model based designs for Aircraft sidewall Noise Reduction***

Period of Visit: **January 3, 2011 – July 31, 2011**

Goal: To develop metamaterials, consisting of a lattice structure of resonators that have the potential to block sound propagation in specific frequency bands without adding much weight to the structure

Strategy: Develop a method that can be used to determine the wave propagation characteristics of a resonant metamaterial. Theoretical models are used to analyze the longitudinal wave propagation along a rod lined with tuned resonators.

Accomplishments: A method to determine the effective properties of resonant metamaterials was proposed. The effective density and modulus are determined using the vibraiton responses and a transfer function approach. Predictions of these effective material properties compare favorably with laboratory measurements.

Future Work: Develop acoustic meta-material structures for efficient control of vibration and sound.

Pending Publications: Submitted for publication titled "Determination of effective density and modulus of resonant metamaterials"

Seminar Presented:
When: Friday, March 25, 2011 9:30 AM-11:00 AM
Where: LaRC-CR-B1208-R150A
Topic: Metamaterials