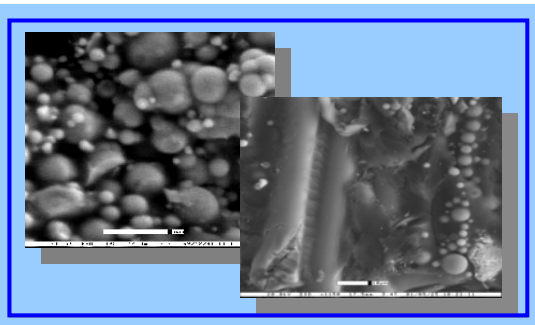
Synopsis:
Rotating Compression Molding for Acoustically Attenuating Composites



Microstructures of the composites

Applications of acoustic composites

Background

Traditional passive approaches to controlling low-frequency acoustical energy have centered around two variables: mass and stiffness. While effective barriers against low-frequency noise, these two variables are inevitably limited to applications in which weight and rigidity are of minor concern. A third variable (laminations of dissimilar materials) has proved effective in dealing with this problem but presents manufacturing constraints limiting the range of potential applications. This project attempts to conquer these deficiencies by creating acoustically attenuating composite materials using a viable processing technique.

Goals

- Develop appropriate processing techniques for acoustic particles/continuous reinforcement fiber composites
- Investigate effects of particle parameters (size, mixing ratio, etc.) on processibility
- Characterize sound attenuation and mechanical properties of resulting composites

Projects/Research Highlights

- Develop rotating compression molding process techniques to achieve improved distribution of acoustic particles
- Realize improved acoustic attenuating properties of fiber-reinforced composites
- Control and empirically verify particle dispersion in the composite material

Benefits to Industry

- Structural composites with built-in acoustic impedance properties
- Knowledge of precise mixtures required to produce desired attenuation characteristics
- Comprehensive database of acoustic attenuation of structural composite