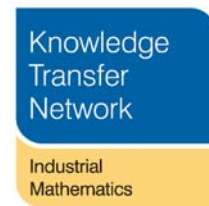


Shorter KTP Opportunity



Company name: Dyson Limited

Location: Dyson Headquarters, Tetbury Hill, SN16 0RP, Malmesbury, Wiltshire, U.K.

Title: Modelling the acoustic absorption properties of materials

Duration: 6 months

Preferred start date: January 2013

Project description

Porous materials such as foams and felts are often used to reduce noise levels. However, these materials are often ineffective at low frequencies. Acoustic meta-materials, which consist of regular arrays of resonant elements, have been proposed as an alternative which would allow absorption at lower frequency relative to the size of the absorber. When applying these silencers in practical situations the performance of these materials is measured in terms of far field radiated sound power. Therefore it is desirable to account for the effects of the geometry surrounding the silencer, the characteristics of the noise sources, the presence of mean flow and the far field radiation pattern in addition to the underlying behaviour of the material. The goal of this project is to predict the performance of silencers which use porous materials or acoustic meta-materials within the context of consumer goods. This should allow improved silencer design and reduced noise levels.

Candidate profile:

- Strong understanding of analytical methods for wave problems, specifically for acoustics.
- Ideally, the candidate will have familiarity with analysis of porous media or acoustic meta-materials. Experience may include:
 - Biot model of fluid saturated porous media;
 - Fluid-structure interactions;
 - Bloch waves in periodic structures.
- More general knowledge of acoustics is advantageous.
- Excellent communication skills especially the ability to introduce technical concepts to non-specialists.