



<b><i>Project Title:</i></b>	<i>Electron Microscopy Investigations of Core-Shell Inorganic Nanotubes</i>
<b><i>Project Short description</i></b>	<p>The hollow interior core of nanotubes, both carbon and non-carbon (BN, WS<sub>2</sub> etc.) provide the necessary space for the filling, encapsulation and confinement of molecules and crystals both organic and inorganic. In addition they provide templates for the formation of core-shell nanotubes. The reduced dimensionality of the encapsulated material as a consequence of “confinement” presents the advantage of different characteristics compared to that of the bulk material. The interaction between the encapsulated material and the host nanotube plays a crucial role and therefore can govern the structure and electronic properties of such a system. The present project aims to investigate the local atomic structure, elucidate the nature and structure of the filled material within the nanotube by a combination of scanning/transmission electron microscopic techniques including imaging, diffraction and spectroscopy. Several applications are envisaged for these nanocomposites including medical imaging and diagnostics.</p>
<b><i>Expected Start/end date</i></b>	Starting Date: Jan 2015



<p><b><i>Required degree and Background knowledge of students, minimum grade point average, etc...</i></b></p>	<p>Masters in Physics Candidates with a background in experimental Physics with a good track record are desired. Knowledge of Transmission Electron Microscopy (TEM) will be valued but not compulsory.</p>
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**Supervisor at INL**

<b>Name:</b>	Leonard Deepak Francis
<b>Position:</b>	Staff Researcher
<b>email:</b>	leonard.francis@inl.int