

Project proposal template – Faculty studentships Summer 2014

<i>Project title</i>	<input type="text" value="Particulate systems in fire and explosion safety engineering"/>	<i>Director of Study</i>	<input type="text" value="Dr K Volkov"/>
<i>Second Supervisor</i>	<input type="text" value="Dr A Heidari"/>	<i>School</i>	<input type="text" value="Mechanical and Aut"/> ▼
<i>Other members of supervisory team</i>	<input type="text"/>	<i>Any requirements from applicant (eg degree in specific subject area)</i>	<input type="text"/>
Project summary (max 1,000 characters)			
<p>Emission of significant amounts of atmospheric aerosols, in addition to gas pollutants, negatively affects the environment in most of European countries. Aerosol emission into the atmosphere may be controlled or accidental. Large-scale industrial fires give the examples uncontrolled accidental emission of vast amount of aerosol. Fires and smoke in objects with high accumulation of occupants and difficult evacuation in case of emergency are particularly hazardous. Probability of such events increased in recent years by threat of terrorist attacks. This project aims to quantify and to monitor aerosol emission, to assess its fire and explosion potential, and to create tools for reliable prediction of aerosol evolution and transport. The need in such a study becomes particularly evident in view of recent statistics that shows the increased frequency and severity of accidents involving hazardous aerosols. Computer tools have the potential to model the relevant physics and dynamics, but without relevant physical and mathematical models, choice of appropriate numerical methods, adjustment of computational parameters and proper user guidelines based on extensive validation work, very poor prediction capability can be expected. Computer modelling of the accident scenario development is able to provide reliable data of the possible pressure loads resulted from explosion process.</p>			