

Speaker Resume

	Name	Dr Stephen D. Prior
	Affiliation	University of Southampton
	Title	Reader in Unmanned Air Vehicles
Speech topic	AETHER – Persistent Aerial Surveillance using a Small Unmanned Aircraft System	
Biography	<p>Dr. Prior has been working in the area of Field Robotics for the past 25 years. His research interest in autonomous systems relates to a shortlisted entry to the MoD Grand Challenge event in August 2008, where he led a team to design, make and test a novel unmanned aerial vehicle, which consisted of a patented Y6 arrangement. On the basis of this, he founded the Autonomous Systems Lab and has been researching with a small team of staff/students working on defence-related robotic technologies. He is on the editorial board for the International Journal of Micro Air Vehicles and has published widely on the subject. Recent work involved the design and development of a series of Nanotechnology platforms, which were demonstrated and flown at the DSEi exhibition at the Excel Centre in London (September 2011), as well as developing the winning entry to the DARPA UAVForge challenge 2012. During the last year he has been building a Tethered UAS solution for persistent stare capability.</p>	
Lecture Summary	<p>All small Unmanned Aircraft (UA) have severe limitations from a lack of endurance capability. This is a direct result of using battery technologies which are limited in their capacity, current capability, mass and energy density. The most widely used chemistry in small battery powered UAVs is Li-Po with its peak energy density of about 200 Wh/kg. Much research has been directed at finding alternative power sources, from Solar, Hydrogen Fuel Cells to Nuclear batteries. The latest contender is Li-S chemistries which appear to offer energy densities of up to 400 Wh/kg within the next 2 years. Li-S batteries claim to be safer in terms of damage tolerance and the lack of thermal runaway, which can be an issue with the current generation Li-Po batteries.</p> <p>This presentation will outline the alternatives and point towards the likely future direction of this technology. The author will also present other design strategies and design tools which help to promote the efficient use of power within these types of Unmanned Aircraft.</p>	