Spacecraft Micro-propulsion

John Stark
Head of School of Engineering & Materials Science
• New types of space mission have led to new micro-propulsion requirements
• Missions:
  – Formation flying of small satellites
  – Large ‘Science’ missions
• Propulsion:
  – Electric propulsion provides most efficient use of propellant and hence better satellite performance
  – Micro fabrication techniques enable an old concept to be competitive

Smart mission used electric propulsion to go to the Moon
Propulsion concept developed at QMUL is *colloid – electrospray* system.

- Unique capability to provide wide range thrust factor: $1 \Rightarrow 10,000$
- Ideal for small satellites as well as large missions
- Concept is ‘safe’ hence ideal for university based activity
• Partnership established between QMUL and Beihang University
• Funding from CNSA ~4 million Yuan, to support joint research centre in Beijing
• 1st phase: staff exchange – Prof Tang 1 year at QMUL November 2007; Prof Stark appointed Guest Professor at Beihang August 2007