

*New research and teaching institute dedicated to studying the fundamental science behind shock waves, high velocity collisions and extremes of pressure and heat*

## Vision

To form a UK community linked through the ISP at Imperial College delivering world-leading research and education in dynamic loading of condensed matter

## Key facts

- Institute of Shock Physics (ISP) started on 1<sup>st</sup> March 2008
- Funded by a 5-year contract from AWE worth £10.2M
- Hub: Imperial College London
- Initial spokes; UCL and Cranfield University (Shrivenham); each received a £1M sub-contract

## Values

- Open
- Collaborative
- Support
- Trust
- Safe working

## Shock waves

*From impact science and meteorite crashes...*



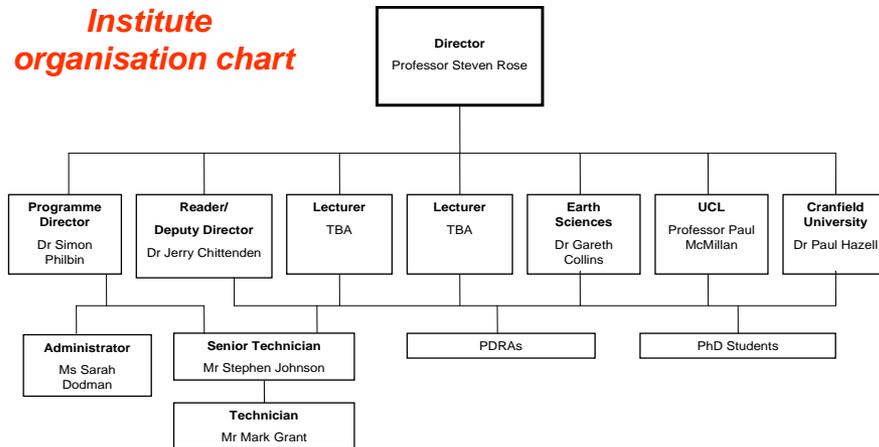
*... to the formation of tsunamis*



## Year 1 Achievements

- Appointment of core Institute staff, including Institute Director, interim Deputy Director, Programme Director and Administrator
- Creation of a new technician team within the Department of Aeronautics that will provide a technical service to ISP through operating the new gas gun equipment. This has involved the appointment of two new technicians
- Appointment of two PDRAs; a 4-year post on computational studies (Earth Sciences Department) and a 1-year pulsed power research post (Physics Department)
- The first ISP PhD project has commenced at Imperial, involving the study of pulsed power driven jets
- Several more PhD projects have been identified for Imperial, UCL and Shrivenham and these will be initiated in year 2
- The Shrivenham (Cranfield University) baseline programme includes funding for a 4-year technician post as well as 4-year academic/staff support at 50% plus materials and equipment costs
- The UCL baseline programme includes funding for a 4-year PDRA plus associated staff, materials and equipment costs
- Enabling works have been carried out in the hypersonics and high-speed impact laboratory, Department of Aeronautics as part of the refurbishment of this facility to house new gas gun equipment. Detailed design work for the services is underway, together with discussions with AWE over the expected imminent procurement by AWE of equipment from PAI
- A project has been initiated to develop a new pulsed power facility based on the LTD (linear transformer driver) approach
- Space for a dedicated headquarters and office accommodation has been secured for the ISP and following on from some basic refurbishment works this facility is expected to be available for occupancy in May 2009
- The preliminary work and proposal development has been undertaken for a new postgraduate Masters degree in shock physics and it is planned that following further development this course will commence in autumn 2010
- A new undergraduate module in hydrodynamics and shocks has been approved by the Department of Physics Undergraduate Studies Committee to commence in autumn 2009
- Outreach activities have included LLNL, Oxford and Cambridge Universities

## Institute organisation chart



## Leading science

- Gas gun enabled impact science
- Isentropic compression to Mbar pressures
- Developing advanced diagnostics for dynamic compression
- EOS studies
- Static high pressure research (DAC)
- Computational science and theoretical studies