

SCOPE OF THE MEETING:

Quantum Science Symposium (QSS)-2012, is our second international symposium in the physical sciences series to be held at the prestigious Peterhouse (college) of the University of Cambridge, United Kingdom. The first meeting was organized in Cambridge, Massachusetts, USA at the Courtyard Marriot in the vicinity of Harvard University and Massachusetts Institute of Technology on September 26-27, 2011, which was inaugurated by MIT Physics Nobel Laureate Professor Frank Wilczek. The purpose and scope of this symposium is to provide a forum for the discussion of the current state of the art of rapidly evolving Quantum & Graphene science, highly interdisciplinary fields.

Quantum Science Symposium (QSS)-2012:

Although quantum physics/mechanics was an old topic widely popularized by German Physicist Erwin Schrödinger during 1940's and American Physicist Richard Feynman during 1980's, however, the progress made over the last decade in quantum science (includes information, computing and communication) has provided ground work for quantum cryptography and quantum networks to become a reality. In parallel, molecular spintronics, quantum optics, nanophotonics, entanglement to quantum memories also advanced at a rapid speed. The cross-disciplinary merger of quantum physics and nanophotonics with principles of networking in communication opens new perspective for developing modern quantum communication applications with an eye on practical devices. On the other hand, graphene is the basic structural element of some carbon allotropes including graphite, charcoal, carbon nanotubes and fullerenes. The promising properties of the graphene have been extensively demonstrated by Andre Geim and Konstantin Novoselov (2010 Physics Nobel Prize recipients).

In this theme meeting we combined quantum plasmonics/spintronics with graphene plasmonics to develop next-generation devices. Additionally, the applications of graphenes with respect to quantum science will be focused, most importantly: graphene use as a quantum liquid, quantum transport in tri-layered graphenes, graphene transistors and nanoribbons. Quantum repeaters, gates and computation built on a single module will be also addressed using trapped ions, qubits and integrated photonics. Quantum biology refers to the applications of quantum mechanics to biological objects and problems. Especially quantum tunneling, entanglement in biology, and development of a new generation of quantum dots for biological imaging, graphene biosensors for diagnostics will be addressed. The branch of quantum spintronics and graphene has attracted a much attention in recent years from both academic and industry laboratories, so we combined the quantum science (quantum information, quantum computing, quantum communication, quantum biology) with graphene research, grouped and referred as '*Quantum Science Symposium.*'

In this international meeting, prominent researchers (physicists, chemists, materials scientists, biologists, electrical, electronic and computer engineers) from both academia and industry will gather and discuss the applications in form of keynote lectures, invited talks, short oral, and poster presentations.

Note: All the members who participate in this symposium have to register for the meeting.

Venue: The Venue Peterhouse is the oldest College of the University of Cambridge, founded in 1284 and an institution dedicated to education and research. Some of the influential Petreans include: Henry Cavendish, Lord Kelvin, Sir Frank Whittle and Christopher Cockerill, and Nobel Laureates – Sir John Kendrew, Sir Aaron Klug, Archer Martin and Max Perutz, who gave a twentieth century lead in the field of Molecular Biology. Since many centuries it remained as a hub for innovation and successive generations of the brightest young people around the world. Please join for an intellectual gathering in the Quantum Science' arena at the prestigious college Peterhouse in the Premier University campus.