

CROSS DISCIPLINARY PLASMA SCIENCE PROGRAMME

The plasma state of matter abounds in many unique and exotic properties, nonequilibrium energy distributions, high energy density, intense charged particle and radiation flux, instabilities, self-organization, etc. This has contributed to its emergence as a powerful tool in a variety of scientific disciplines. Material synthesis and modification mediated by plasmas, non-equilibrium plasma chemistry, collective particle acceleration techniques, coherent radiation sources, etc. are successful examples of such cross-disciplinary linkage.

The Science and Engineering Research Council (SERC) of the Department of Science and Technology (DST), on a new initiative, has identified Cross Disciplinary Plasma Science (CDPS) as an area of thrust. Research programmes linking plasma physics with other branches of physics, material sciences, chemistry, engineering and environmental sciences will be identified and funded under the programme. The focus will be on basic scientific aspects, applications and technologies. SERC's ultimate objective is to identify and provide financial support for a number of well-motivated interdisciplinary projects.

Examples of CDPS areas are: Plasma based particle acceleration – Coherent radiation sources – Gaseous electronics for lasers – Microplasma displays – Plasma mediated surface sciences and engineering – Plasma chemistry – Pyrometallurgy – Synthesis of materials – Nanotechnology – Plasma techniques in environmental remediation – Isotope separation – Analytical techniques using microplasmas – Antennae in plasmas – Thermic energy conversion – Plasma diagnostics – Intense ion and electron beams. They are, by no means exclusive, creative search for extending these areas will be encouraged.

CDPS programme will be implemented under the following action plan: research opportunity reports will be prepared by participating experts in emergent and topical areas where plasma techniques and phenomena can make path-breaking contributions. These reports will be discussed in target group meetings and focused research projects will be generated. The proposals will be reviewed through a peer review mechanism and submitted for approval. The approved programmes will be funded by SERC and monitored through a Programme Advisory Committee.

Scientists and engineers from all disciplines from universities, educational and research institutions, interested in knowing more about and participating in the CDPS programme are invited to write to the following address, indicating their areas of interest.

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