CD Rom Index

High Power Laser Science

Femtosecond Pulse Physics

- 1 An assessment of the reproducibility of the Gemini retro focusing system
- 2 Coherent control of high harmonic generation from relativistically oscillating plasmas via elliptically polarized laser pulses
- **3** TLD measurements of electron and X-ray emis-sion from different materials irradiated by the Gemini laser
- 4 The Petatron: A high-rep rate combination diagnostic for laser-plasma experiments
- 5 Measurement of laser-generated electron slope temperature using electron stopping
- 6 Relativistic high-order harmonics from gas jets and their power scaling
- 7 Characterisation of temporal contrast following a double plasma mirror system

High Energy Laser Interactions

- 8 Characterisation of collisionless shocks in tenuous Plasma
- **9** The effect of using multiple laser pulses on the angular distribution of laser accelerated proton beams
- **10** Implications of primary and secondary sources of debris for ultrathin targets on Vulcan Petawatt
- **11** Effects of laser pulse parameters on TNSA proton acceleration
- 12 Features of ion acceleration from ultra-thin foils on Vulcan Petawatt
- **13** Effects of density scale length on critical surface morphology Via measurements of laser specular reflectivity
- 14 Scaling of ion spectral peaks in a hybrid RPA-TNSA regime
- **15** Reflectivity measurements in ultraintense laser-plasma interactions
- 16 Lattice structure effects on energetic electron transport in solids

- **17** High-energy proton acceleration using an innovative plasma-based fast (f/0.6) focusing optic
- 18 Measurement of Rayleigh-Taylor instability growth in a layered target heated by a high power short pulse laser
- **19** Proton beam steering from ultra-thin foils irradiated by intense laser pulses
- 20 Formation of plasma channel with Long pulse interaction
- **21** Characterisation of debris emission from PW laser solid interactions
- **22** Exotic x-ray spectra from ultra-intense laser driven hollow atom transitions

Theory and Computation

- 23 Super-Gaussian transport theory and field generating instability in laser-plasmas
- 24 High-field electrodynamics in plasmas
- **25** 2D hydrodynamic code development and simulations relevant to fast ignition fusion targets
- 26 Evolution of a short pulse via ray tracing
- 27 Calculation of Siegert states of molecules in electric field : an H₂⁺ study
- **28** Radiation reaction in ultra-intense laser fields
- **29** Time-dependent R-matrix theory for ultra-fast processes
- **30** Molecular dynamics simulations for the viscosity of non-ideal plasmas
- 31 Kinetic theory of radiation reaction
- **32** Simulating prolific pair-production in 10PW laser-plasma interactions
- **33** The magnetic switchyard : Guiding fast electrons for fast ignition ICF
- **34** Production of high energy protons with hole-boring radiation pressure acceleration
- **35** The effect of density scalelength on the fast electron beam generated by ultra-intence laser-solid interactions

CD ROM Index

- **36** An analytical model for the energy of relativistic electrons escaping a plasma
- **37** Numerical simulation of plasma-based laser pulse compression to petawatt powers via Raman amplification
- **38** Use of the Debye-Waller factor as a temperature diagnostic in strongly coupled non-equilibrium plasmas
- **39** A new VFP-PIC hybrid code to model fast electron transport with hydrodynamic response

Ultrafast and XUV Science

- **40** Time-domain dual pulse coherent control with few-cycle strong-field laser pulses
- **41** Redistribution of vibrational population with few-cycle strong-field laser pulses
- **42** KEIRA-CHIMERA: a new method in high resolution femtosecond laser mass spectrometry
- 43 Fragmentation of allene by intense femtosecond lasers
- **44** Beam-transport diffraction in near-infrared few-cycle strong-field experiments
- **45** Dissecting charge and lattice order in 1T–TaS₂ with ultrafast XUV ARPES¹
- **46** Double slit interferometry to measure the EUV refractive indices of solids using high harmonics
- 47 Probing the microscopic origin of laser-induced ultrafast spin dynamics using time resolved photoemission/MOKE

Lasers for Science Facility Programme

Biology

- 48 Photoacoustic spectroscopy
- **49** Two-photon excited fluorescence lifetime imaging of the intracellular uptake of (E)-combretastatin derivatives
- **50** The plant secretoryome: protein-protein interactions in the higher plant secretory pathway
- **51** Probing the mechanism of blue light sensing BLUF domain proteins: A study through transient Infra-red spectroscopy, isotope editing and mutagenesis
- 52 Kinetically stable metal complexes for multimodality PET/SPECT and optical fluorescence microscopy probed in vitro by FLIM

- **53** Porous carbon microspheres: Solution phenomena and cellular uptake
- **54** Total internal reflection and single molecule fluorescence microscopy in plant cells
- **55** Rapamycin does not affect the interaction between mTOR and raptor but causes increased nuclear levels of highly expressed mTOR in HeLa cells

Chemistry

- **56** LIAD-fs: A novel method for studies of neutral biomolecules in the gas phase
- **57** Photoacoustic stimulated raman spectroscopy (PARS) for trace detection of molecular hydrogen
- **58** Dynamics of chemical and photochemical reactions in solution
- **59** Picosecond time-resolved infrared spectroscopy of arylpentazole
- **60** Isotopic hydration of cellobiose: vibrational spectroscopy and dynamical simulations
- 61 Optical trapping of sub-micron liquid aerosol droplets

Physics

62 Ultrafast manipulation of photon transport and molecular beams

Laser for Science and Development

Artemis

63 Velocity map imaging spectrometer for the study of atomic and molecular physics in the gas phase

Astra

- 64 An assessment of the reproducibility of the Gemini retro focusing system
- **65** Modelling of relative delay for scattered rays in a grating stretcher
- 66 Characterisation and correction of the Gemini wavefront
- 67 Improving the contrast of Astra Gemini
- 68 Spatial overlap measurement of two F/2 parabolas on Astra-Gemini
- 69 Measuring and optimizing the pulse front tilt for Astra-Gemini Laser

CD ROM Index

Lasers for Science Facility

- **70** The Lasers for Science Facility in the Research Complex at Harwell
- 71 Developments in sample management in the ULTRA laboratory
- 72 Signal dependence on depth in transmission Raman spectroscopy
- **73** Improvement of laser tweezer experiments using kHz-rate feedback control
- 74 Molecular structure & dynamics in the Research Complex at Harwell
- **75** Cross-facility research activities in the Lasers for Science Facility

Vulcan

- 76 10PW short pulse laser diagnostics
- 77 Fighting chromatic aberration in 10PW
- 78 10PW compressor requirement analysis
- **79** Influence of the deuteration level on DKDP OPCPA amplifier
- 80 Study of self frequency shifting solitons in photonic crystal fibre to generate a synchronised 1053nm for the 10PW upgrade project
- 81 Study of the 10PW front-end contrast
- 82 Two beam spatial phasing with CW laser
- 83 Improvements in the Vulcan picosecond OPCPA
- 84 Vulcan 10PW project : Design of the long pulse pump laser
- 85 Rectangular slab amplifier development
- 86 Vulcan 10PW upgrade: Development of metallic900 lines/mm pulse compression gratings
- 87 Pre-pulse generator for controllable picoseconds pre-pulses in TAP

Astra

88 Current status of the DiPOLE project

Target Fabrication

- 89 Production of novel Gaussian-shaped micro-bump targets
- 90 Overview of the Target Fabrication new chemistry laboratory
- 91 Novel micro-focusing cone target fabrication
- **92** Production of novel thin-walled cone micro targets for an astrophysical jet experiment

Instrumentation and Plasma Diagnostics

- 93 Characterisation of plastic scintillators for detection of laser-accelerated protons
- **94** Maximising the dynamic range of radiochromic film through novel scanning techniques

Engineering

- 95 Nitrogen usage and Nitrogen generation
- 96 Environmental and equipment monitoring
- 97 Motion control system development
- 98 Pulsed power developments
- 99 Flash lamp test facility pulsed power and control upgrade
- 100 Research Complex laser interlocks system
- 101 Developments of the laser interlocks
- **102** Vulcan TAW vacuum system under experimental loading conditions