

# Publications

## JOURNAL PAPERS

### ARTEMIS

A Crepaldi, G Autès, G Gatti, S Roth, A Sterzi, G Manzoni, M Zacchigna, C Cacho, RT Chapman, E Springate, EA Seddon, P Bugnon, A Magrez, H Berger, I Vobornik, M Kalläne, A Quer, K Rossnagel, F Parmigiani, OV Yazyev, M Grioni

**Enhanced ultrafast relaxation rate in the Weyl semimetal phase of MoTe<sub>2</sub> measured by time- and angle-resolved photoelectron spectroscopy**

PHYSICAL REVIEW B, **96**, 241408 (2017)

F Cilento, G Manzoni, A Sterzi, S Peli, A Ronchi, A Crepaldi, F Boschini, C Cacho, R Chapman, E Springate, H Eisaki, M Greven, M Berciu, AF Kemper, A Damascelli, M Capone, C Giannetti, F Parmigiani

**Dynamics of correlation-frozen antinodal quasiparticles in superconducting cuprates**

SCIENCE ADVANCES, **4**, eaar1998 (2018)

### CALTA

P Mason, M Divoky, K Ertel, J Pilar, T Butcher, M Hanuš, S Banerjee, J Phillips, J Smith, M De Vido, A Lucianetti, C Hernandez-Gomez, C Edwards, T Mocek, J Collier

**Kilowatt average power 100J-level diode pumped solid state laser**

OPTICA, **4**, 438-439 (2017)

M De Vido, MJ Walsh, S Kirkpatrick, R Svruga, K Ertel, PJ Phillips, PD Mason, S Banerjee, JM Smith, TJ Butcher, C Edwards, C Hernandez-Gomez, JL Collier

**Impact of gas cluster ion and accelerated neutral atom beam surface treatments on the laser-induced damage threshold of ceramic Yb:YAG**

OPTICAL MATERIALS EXPRESS, **7**, 3303-3311 (2017)

### GEMINI

GM Samarin, M Zepf, G Sarri

**Radiation reaction studies in an all-optical set-up: experimental limitations**

JOURNAL OF MODERN OPTICS, **64**, 2281-2288 (2017)

LA Gizzi, B Marchetti, R Pattathil

**Summary of WG7-High brightness power sources: From laser technology to beam drivers**

NUCLEAR INSTRUMENTS AND METHODS IN PHYSICS RESEARCH SECTION A, **909**, 450-451 (2017)

C Scullion, D Doria, L Romagnani, A Sgattoni, K Naughton, D Symes, P McKenna, A Macchi, M Zepf, S Kar, M Borghesi

**Polarization Dependence of Bulk Ion Acceleration from Ultrathin Foils Irradiated by High-Intensity Ultrashort Laser Pulses**

PHYSICAL REVIEW LETTERS, **119**, 54801 (2017)

J Cowley, C Thornton, C Arran, R Shaloo, L Corner, G Cheung, C Gregory, S Mangles, N Matlis, D Symes, R Walczak, S Hooker

**Excitation and Control of Plasma Wakefields by Multiple Laser Pulses**

PHYSICAL REVIEW LETTERS, **119**, 44802 (2017)

J Warwick, T Dzelzainis, M Dieckmann, W Schumaker, D Doria, L Romagnani, K Poder, J Cole, A Alejo, M Yeung, K Krushelnick, S Mangles, Z Najmudin, B Reville, G Samarin, D Symes, A Thomas, M Borghesi, G Sarri

**Experimental Observation of a Current-Driven Instability in a Neutral Electron-Positron Beam**

PHYSICAL REVIEW LETTERS, **119**, 185002 (2017)

K Poder, J Cole, JC Wood, NC Lopes, S Alatabi, P Foster, C Kamperidis, O Kononenko, C Palmer, D Rusby, AA Sahai, D Symes, G Sarri, JR Warwick, S Mangles, Z Najmudin

**Measurements of self-guiding of ultrashort laser pulses over long distances**

PLASMA PHYSICS AND CONTROLLED FUSION, **60**, 014022 (2017)

J Bin, M Yeung, Z Gong, H Wang, C Kreuzer, M Zhou, M Streeter, P Foster, S Cousens, B Dromey, J Meyer-ter-Vehn, M Zepf, J Schreiber

**Enhanced Laser-Driven Ion Acceleration by Superponderomotive Electrons Generated from Near-Critical-Density Plasma**

PHYSICAL REVIEW LETTERS, **120**, 74801 (2018)

J Cole, K Behm, E Gerstmayr, T Blackburn, J Wood, C Baird, M Duff, C Harvey, A Ilderton, A Joglekar, K Krushelnick, S Kuschel, M Marklund, P McKenna, C Murphy, K Poder, C Ridgers, G Samarin, G Sarri, D Symes, A Thomas, J Warwick, M Zepf, Z Najmudin, S Mangles

**Experimental Evidence of Radiation Reaction in the Collision of a High-Intensity Laser Pulse with a Laser-Wakefield Accelerated Electron Beam**

PHYSICAL REVIEW X, **8**, 011020 (2018)

JS Green, N Booth, RJ Dance, RJ Gray, DA MacLellan, A Marshall, P McKenna, CD Murphy, CP Ridgers, APL Robinson, D Rusby, RHH Scott, L Wilson

**Time-resolved measurements of fast electron recirculation for relativistically intense femtosecond scale laser-plasma interactions**

SCIENTIFIC REPORTS, **8**, 4525 (2018)

B Gonzalez-Izquierdo, R Capdessus, M King, R Gray, R Wilson, R Dance, J McCreddie, N Butler, S Hawkes, J Green, N Booth, M Borghesi, D Neely, P McKenna

**Radiation Pressure-Driven Plasma Surface Dynamics in Ultra-Intense Laser Pulse Interactions with Ultra-Thin Foils**

APPLIED SCIENCES, **8**, 336 (2018)

AB Sharba, O Chekhlov, AS Wyatt, R Pattathil, M Borghesi, G Sarri

**Characterization of ultrashort laser pulses employing self-phase modulation dispersion-scan technique**

JOURNAL OF OPTICS, **20**, 35502 (2018)

## PLASMA PHYSICS

JD Sadler, M Sliwa, T Miller, MF Kasim, N Ratan, L Ceurvorst, A Savin, R Aboushelbaya, PA Norreys, D Haberberger, AS Davies, S Bucht, DH Froula, J Vieira, RA Fonseca, LO Silva, R Bingham, K Glize, RM Trines

***Robustness of Raman plasma amplifiers and their potential for attosecond pulse generation***

HIGH ENERGY DENSITY PHYSICS, **23**, 212-216 (2017)

JD Sadler, RM Trines, M Tabak, D Haberberger, DH Froula, AS Davies, S Bucht, LO Silva, EP Alves, F Fiuza, L Ceurvorst, N Ratan, MF Kasim, R Bingham, PA Norreys

***Optimization of plasma amplifiers***

PHYSICAL REVIEW E, **95**, 53211 (2017)

NFY Chen, MF Kasim, L Ceurvorst, N Ratan, J Sadler, MC Levy, R Trines, R Bingham, P Norreys

***Machine learning applied to proton radiography of high-energy-density plasmas***

PHYSICAL REVIEW E, **95**, 43305 (2017)

A Adak, PK Singh, DR Blackman, AD Lad, G Chatterjee, J Pasley, APL Robinson, G Ravindra Kumar

***Controlling femtosecond-laser-driven shock-waves in hot, dense plasma***

PHYSICS OF PLASMAS, **24**, 72702 (2017)

AF Savin, AJ Ross, M Serzans, RMGM Trines, L Ceurvorst, N Ratan, B Spiers, R Bingham, APL Robinson, PA Norreys

***Attosecond-scale absorption at extreme intensities***

PHYSICS OF PLASMAS, **24**, 113103 (2017)

F Cruz, EP Alves, RA Bamford, R Bingham, RA Fonseca, LO Silva

***Formation of collisionless shocks in magnetized plasma interaction with kinetic-scale obstacles***

PHYSICS OF PLASMAS, **24**, 22901 (2017)

K Glize, C Rousseaux, D Bénisti, V Dervieux, L Gremillet, SD Baton, L Lancia

***Stimulated backward Raman scattering driven collectively by two picosecond laser pulses in a bi- or multi-speckle configuration***

PHYSICS OF PLASMAS, **24**, 32708 (2017)

P Tzeferacos, A Rigby, A Bott, AR Bell, R Bingham, A Casner, F Cattaneo, EM Churazov, J Emig, N Flocke, F Fiuza, CB Forest, J Foster, C Graziani, J Katz, M Koenig, C-K Li, J Meinecke, R Petrasso, H-S Park, BA Remington, JS Ross, D Ryu, D Ryutov, K Weide, TG White, B Reville, F Miniati, AA Schekochihin, DH Froula, G Gregori, DQ Lamb

***Numerical modeling of laser-driven experiments aiming to demonstrate magnetic field amplification via turbulent dynamo***

PHYSICS OF PLASMAS, **24**, 41404 (2017)

TW Huang, CT Zhou, APL Robinson, B Qiao, AV Arefiev, PA Norreys, XT He, SC Ruan

***Nonlinear parametric resonance of relativistic electrons with a linearly polarized laser pulse in a plasma channel***

PHYSICS OF PLASMAS, **24**, 43105 (2017)

M Koepke, R Bingham, K Ronald

***Special Issue: Papers from the Thirteenth International Workshop on the Interrelationship between Plasma Experiments in the Laboratory and in Space, 23-28 August 2015, Pitlochry, United Kingdom***

PLASMA PHYSICS AND CONTROLLED FUSION, **59**, 20101 (2017)

JA Holloway, PA Norreys, AGR Thomas, R Bartolini, R Bingham, J Nydell, RMGM Trines, R Walker, M Wing

***Brilliant x-rays using a two-stage plasma insertion device***

SCIENTIFIC REPORTS, **7**, 3985 (2017)

H Schmitz

***Schnek: A C++ library for the development of parallel simulation codes on regular grids***

COMPUTER PHYSICS COMMUNICATIONS, **226**, 151-164 (2018)

P Tzeferacos, A Rigby, AFA Bott, AR Bell, R Bingham, A Casner, F Cattaneo, EM Churazov, J Emig, F Fiuza, CB Forest, J Foster, C Graziani, J Katz, M Koenig, C Li, J Meinecke, R Petrasso, H Park, BA Remington, JS Ross, D Ryu, D Ryutov, TG White, B Reville, F Miniati, AA Schekochihin, DQ Lamb, DH Froula, G Gregori

***Laboratory evidence of dynamo amplification of magnetic fields in a turbulent plasma***

NATURE COMMUNICATIONS, **9**, 591 (2018)

A Rigby, F Cruz, B Albertazzi, R Bamford, AR Bell, JE Cross, F Fraschetti, P Graham, Y Hara, PM Kozlowski, Y Kuramitsu, DQ Lamb, S Lebedev, JR Marques, F Miniati, T Morita, M Oliver, B Reville, Y Sakawa, S Sarkar, C Spindloe, R Trines, P Tzeferacos, LO Silva, R Bingham, M Koenig, G Gregori

***Electron acceleration by wave turbulence in a magnetized plasma***

NATURE PHYSICS, **14**, 475-479 (2018)

M Wadud, B King, R Bingham, G Gregori

***Axion particle production in a laser-induced dynamical spacetime***

PHYSICS LETTERS B, **777**, 388-393 (2018)

K Jana, DR Blackman, M Shaikh, AD Lad, D Sarkar, I Dey, APL Robinson, J Pasley, G Ravindra Kumar

***Probing ultrafast dynamics of solid-density plasma generated by high-contrast intense laser pulses***

PHYSICS OF PLASMAS, **25**, 13102 (2018)

RAB Alraddadi, APL Robinson, J Pasley, NC Woolsey

***Enhancing relativistic electron beam propagation through the use of graded resistivity guides***

PHYSICS OF PLASMAS, **25**, 23104 (2018)

C Neuville, K Glize, P Loiseau, P Masson-Laborde, A Debayle, M Casanova, C Baccou, C Labaune, S Depierreux

***Inhibition of crossed-beam energy transfer induced by expansion-velocity fluctuations***

PLASMA PHYSICS AND CONTROLLED FUSION, **60**, 44006 (2018)

## TARGET FABRICATION

I Prencipe, J Fuchs, S Pascarelli, DW Schumacher, RB Stephens, NB Alexander, R Briggs, M Buscher, MO Cernaianu, A Choukourou, M De Marco, A Erbe, J Fassbender, G Fiquet, P Fitzsimmons, C Gheorghiu, J Hund, LG Huang, M Harmand, NJ Hartley, A Irman, T Kluge, Z Konopkova, S Kraft, D Kraus, V Leca, D Margarone, J Metzkes, K Nagai, W Nazarov, P Lutoslawski, D Papp, M Passoni, A Pelka, JP Perin, J Schulz, M Smid, C Spindloe, S Steinke, R Torchio, C Vass, T Wiste, R Zaffino, K Zeil, T Tschentscher, U Schramm, TE Cowan  
***Targets for high repetition rate laser facilities: needs, challenges and perspectives***  
 HIGH POWER LASER SCIENCE AND ENGINEERING, **5**, e17 (2017)

F Suzuki-Vidal, T Clayson, C Stehlé, G Swadling, J Foster, J Skidmore, P Graham, G Burdiak, S Lebedev, U Chaulagain, R Singh, E Gumbrell, S Patankar, C Spindloe, J Larour, M Kozlova, R Rodriguez, J Gil, G Espinosa, P Velarde, C Danson  
***Counterpropagating Radiative Shock Experiments on the Orion Laser***  
 PHYSICAL REVIEW LETTERS, **119**, 55001 (2017)

## VULCAN

SR Mirfayzi, A Alejo, H Ahmed, D Raspino, S Ansell, LA Wilson, C Armstrong, NMH Butler, RJ Clarke, A Higginson, J Kelleher, CD Murphy, M Notley, DR Rusby, E Schooneveld, M Borghesi, P McKenna, NJ Rhodes, D Neely, CM Brenner, S Kar  
***Experimental demonstration of a compact epithermal neutron source based on a high power laser***  
 APPLIED PHYSICS LETTERS, **111**, 44101 (2017)

M Oliver, T White, P Maybe, M KÄ¼hn-Kauffeldt, L Doehl, R Bingham, R Clarke, P Graham, R Heathcote, M Koenig, Y Kuramitsu, D Lamb, J Meinecke, T Michel, F Miniati, M Notley, B Reville, S Sarkar, Y Sakawa, A Schekochihin, P Tzeferacos, N Woolsey, H Park, G Gregori  
***Magneto-optic probe measurements in low density-supersonic jets***  
 JOURNAL OF INSTRUMENTATION, **12**, P12001 (2017)

E Oks, E Dalimier, AY Faenov, P Angelo, SA Pikuz, TA Pikuz, IY Skobelev, SN Ryazanov, P Durey, L Doehl, D Farley, C Baird, KL Lancaster, CD Murphy, N Booth, C Spindloe, P McKenna, N Neumann, M Roth, R Kodama, N Woolsey  
***In-depth study of intra-Stark spectroscopy in the x-ray range in relativistic laser-plasma interactions***  
 JOURNAL OF PHYSICS B: ATOMIC, MOLECULAR AND OPTICAL PHYSICS, **50**, 245006 (2017)

A Higginson, RJ Gray, M King, RJ Dance, SDR Williamson, NMH Butler, R Wilson, R Capdessus, C Armstrong, JS Green, SJ Hawkes, P Martin, WQ Wei, SR Mirfayzi, XH Yuan, S Kar, M Borghesi, RJ Clarke, D Neely, P McKenna  
***Near-100 MeV protons via a laser-driven transparency-enhanced hybrid acceleration scheme***  
 NATURE COMMUNICATIONS, **9**, 724 (2018)

ER Tubman, RHH Scott, HW Doyle, J Meinecke, H Ahmed, RAB Alraddadi, R Bolis, JE Cross, R Crowston, D Doria, D Lamb, B Reville, APL Robinson, P Tzeferacos, M Borghesi, G Gregori, NC Woolsey  
***Time evolution and asymmetry of a laser produced blast wave***  
 PHYSICS OF PLASMAS, **24**, 103124 (2017)

KL Lancaster, APL Robinson, J Pasley, P Hakel, T Ma, K Highbarger, FN Beg, SN Chen, RL Daskalova, RR Freeman, JS Green, H Habara, P Jaanimagi, MH Key, J King, R Kodama, K Krushelnick, H Nakamura, M Nakatsutsumi, AJ MacKinnon, AG MacPhee, RB Stephens, L Van Woerkom, PA Norreys  
***Observation of extremely strong shock waves in solids launched by petawatt laser heating***  
 PHYSICS OF PLASMAS, **24**, 83115 (2017)

A Alejo, AG Krygier, H Ahmed, JT Morrison, RJ Clarke, J Fuchs, A Green, JS Green, D Jung, A Kleinschmidt, Z Najmudin, H Nakamura, P Norreys, M Notley, M Oliver, M Roth, L Vassura, M Zepf, M Borghesi, RR Freeman, S Kar  
***High flux, beamed neutron sources employing deuteron-rich ion beams from D2O-ice layered targets***  
 PLASMA PHYSICS AND CONTROLLED FUSION, **59**, 64004 (2017)

R Wilson, M King, R Gray, D Carroll, R Dance, N Butler, C Armstrong, S Hawkes, R Clarke, D Robertson, C Bourgenot, D Neely, P McKenna  
***Development of Focusing Plasma Mirrors for Ultraintense Laser-Driven Particle and Radiation Sources***  
 QUANTUM BEAM SCIENCE, **2**, 1 (2018)

A Tebartz, S Bedacht, M Hesse, S Astbury, R Clarke, A Ortner, G Schaumann, F Wagner, D Neely, M Roth  
***Creation and characterization of free-standing cryogenic targets for laser-driven ion acceleration***  
 REVIEW OF SCIENTIFIC INSTRUMENTS, **88**, 93512 (2017)

G Chatterjee, PK Singh, APL Robinson, D Blackman, N Booth, O Culfa, RJ Dance, LA Gizzi, RJ Gray, JS Green, P Koester, GR Kumar, L Labate, AD Lad, KL Lancaster, J Pasley, NC Woolsey, PP Rajeev  
***Micron-scale mapping of megagauss magnetic fields using optical polarimetry to probe hot electron transport in petawatt-class laser-solid interactions***  
 SCIENTIFIC REPORTS, **7**, 8347 (2017)

G Vieux, S Cipiccia, DW Grant, N Lemos, P Grant, C Ciocarlan, B Ersfeld, MS Hur, P Lepipas, GG Manahan, G Raj, D Reboledo Gil, A Subiel, GH Welsh, SM Wiggins, SR Yoffe, JP Farmer, C Aniculaesei, E Brunetti, X Yang, R Heathcote, G Nersisyan, CLS Lewis, A Pukhov, JM Dias, DA Jaroszynski  
***An ultra-high gain and efficient amplifier based on Raman amplification in plasma***  
 SCIENTIFIC REPORTS, **7**, 2399 (2017)

TS Robinson, F Consoli, S Giltrap, SJ Eardley, GS Hicks, EJ Ditter, O Ettliger, NH Stuart, M Notley, R De Angelis, Z Najmudin, RA Smith  
***Low-noise time-resolved optical sensing of electromagnetic pulses from petawatt laser-matter interactions***  
 SCIENTIFIC REPORTS, **7**, 983 (2017)

## ULTRA

L Minnes, DJ Shaw, BP Cossins, PM Donaldson, GM Greetham, M Towrie, A Parker, MJ Baker, AJ Henry, RJ Taylor, NT Hunt  
***Quantifying Secondary Structure Changes in Calmodulin using 2D-IR Spectroscopy***  
 ANALYTICAL CHEMISTRY, **89**, 10898-10906 (2017)

## APPENDICES

- R Fritzsich, PM Donaldson, GM Greetham, M Towrie, AW Parker, MJ Baker, NT Hunt  
*Rapid Screening of DNA-Ligand Complexes via 2D-IR Spectroscopy and ANOVA-PCA*  
ANALYTICAL CHEMISTRY, **90**, 2732-2740 (2018)
- JN Iuliano, AA Gil, SP Laptanok, CR Hall, J Tolentino Collado, A Lukacs, SA Hag Ahmed, J Abyad, T Daryaei, GM Greetham, IV Sazanovich, B Illarionov, A Bacher, M Fischer, M Towrie, JB French, SR Meech, PJ Tonge  
*Variation in LOV Photoreceptor Activation Dynamics Probed by Time Resolved Infrared Spectroscopy*  
BIOCHEMISTRY, **57**, 620-630 (2017)
- G Hithell, PM Donaldson, GM Greetham, M Towrie, AW Parker, GA Burley, NT Hunt  
*Effect of oligomer length on vibrational coupling and energy relaxation in double-stranded DNA*  
CHEMICAL PHYSICS, **512**, 154-164 (2018)
- N Holzmann, L Bernasconi, KM Callaghan, RH Bisby, AW Parker  
*Charge transfer in trans-combretastatins*  
CHEMICAL PHYSICS LETTERS, **692**, 146-151 (2018)
- DJ Shaw, RE Hill, N Simpson, FS Hussein, K Robb, G Greetham, M Towrie, AW Parker, D Robinson, JD Hirst, PA Hoskisson, NT Hunt  
*Examining the role of protein structural dynamics in drug resistance in Mycobacterium tuberculosis*  
CHEMICAL SCIENCE, **8**, 8384-8399 (2017)
- JM Kelly, P Keane, J Hall, F Poynton, B Poulsen, S Gurung, I Clark, I Sazanovich, M Towrie, T Gunnlaugsson, S Quinn, C Cardin  
*Inosine can increase DNA's susceptibility to photo-oxidation by a Ru(II) complex due to structural change in the minor groove*  
CHEMISTRY: A EUROPEAN JOURNAL, **23**, 234-238 (2017)
- LK McKenzie, IV Sazanovich, E Baggaley, M Bonneau, V Guerschais, JAG Williams, JA Weinstein, HE Bryant  
*Metal Complexes for Two-Photon Photodynamic Therapy: A Cyclometallated Iridium Complex Induces Two-Photon Photosensitization of Cancer Cells under Near-IR Light*  
CHEMISTRY: A EUROPEAN JOURNAL, **23**, 234-238 (2017)
- S Archer, T Keane, M Delor, E Bevon, A Auty, D Chekulaev, I Sazanovich, M Towrie, A Meijer, J Weinstein  
*Directly Coupled Versus Spectator Linkers on Diimine Pt-II Acetylides-Change the Structure, Keep the Function?*  
CHEMISTRY: A EUROPEAN JOURNAL, **23**, 18239-18251 (2017)
- FA Black, CJ Wood, S Ngwerume, GH Summers, IP Clark, M Towrie, JE Camp, EA Gibson  
*Charge-transfer dynamics at the dye-semiconductor interface of photocathodes for solar energy applications*  
FARADAY DISCUSSIONS, **198**, 449-461 (2017)
- FS Hussein, D Robinson, NT Hunt, AW Parker, JD Hirst  
*Computing infrared spectra of proteins using the exciton model*  
JOURNAL OF COMPUTATIONAL CHEMISTRY, **38**, 1362-1375 (2017)
- M Pizl, BM Hunter, GM Greetham, M Towrie, S Zalis, HB Gray, A Vlcek  
*Ultrafast Wiggling and Jiggling: Ir-2(1,8-diisocyanomethane)(4)(2+)*  
JOURNAL OF PHYSICAL CHEMISTRY A, **121**, 9275-9283 (2017)
- P Donaldson, G Greetham, D Shaw, A Parker, M Towrie  
*A 100 kHz Pulse Shaping 2D-IR Spectrometer Based on Dual Yb:KGW Amplifiers*  
JOURNAL OF PHYSICAL CHEMISTRY A, **121**, 9275-9283 (2017)
- DJ Heyes, SJO Hardman, D Mansell, A Ni Cheallaigh, JM Gardiner, LO Johannissen, GM Greetham, M Towrie, NS Scrutton  
*Excited-State Properties of Protochlorophyllide Analogues and Implications for Light-Driven Synthesis of Chlorophyll*  
JOURNAL OF PHYSICAL CHEMISTRY B, **121**, 9275-9283 (2017)
- LAI Ramakers, G Hithell, JJ May, GM Greetham, PM Donaldson, M Towrie, AW Parker, GA Burley, NT Hunt  
*2D-IR Spectroscopy Shows that Optimized DNA Minor Groove Binding of Hoechst33258 Follows an Induced Fit Model*  
JOURNAL OF PHYSICAL CHEMISTRY B, **121**, 9275-9283 (2017)
- VCA Taylor, D Tiwari, M Duchi, PM Donaldson, IP Clark, DJ Fermin, TAA Oliver  
*Investigating the Role of the Organic Cation in Formamidinium Lead Iodide Perovskite Using Ultrafast Spectroscopy*  
JOURNAL OF PHYSICAL CHEMISTRY LETTERS, **9**, 895-901 (2018)
- AA Gil, SP Laptanok, JN Iuliano, A Lukacs, A Verma, CR Hall, E Yoon, R Brust, GM Greetham, M Towrie, JB French, SR Meech, PJ Tonge  
*Photoactivation of the BLUF protein PixD Probed by the Site-Specific Incorporation of Fluorotyrosine Residues*  
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **139**, 14638-14648 (2017)
- G Neri, PM Donaldson, AJ Cowan  
*The role of electrode-catalyst interactions in enabling efficient CO2 reduction with Mo(bpy)(CO)4 as revealed by vibrational sum-frequency generation spectroscopy*  
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **139**, 13791-13797 (2017)
- J Guan, A Wriglesworth, XZ Sun, EN Brothers, SD Zaric, ME Evans, WD Jones, M Towrie, MB Hall, MW George  
*Probing the Carbon-Hydrogen Activation of Alkanes Following Photolysis of Tp'Rh(CNR)(carbodiimide): A Computational and Time Resolved Infrared Spectroscopic Study*  
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **140**, 1842-1854 (2018)
- M Reinhard, G Aubock, NA Besley, IP Clark, GM Greetham, MWD Hanson-Heine, R Horvath, TS Murphy, TJ Penfold, M Towrie, MW George, M Chergui  
*Photoaquation Mechanism of Hexacyanoferrate(III) Ions: Ultrafast 2D UV and Transient Visible and IR Spectroscopies*  
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **139**, 7335-7347 (2017)



TA Barendt, I Rasovic, MA Lebedeva, GA Farrow, A Auty, D Chekulaev, IV Sazanovich, JA Weinstein, K Porfyrakis, PD Beer  
**Anion mediated photophysical behavior in a C60 fullerene [3] rotaxane shuttle**

JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **140**, 1924-1936 (2018)

M Delor, SA Archer, T Keane, AJHM Meijer, IV Sazanovich, GM Greetham, M Towrie, JA Weinstein

**Directing the path of light-induced electron transfer at a molecular fork using vibrational excitation**

NATURE CHEMISTRY, **9**, 1099-1104 (2017)

PA McClarty, F Kruger, T Guidi, SF Parker, K Refson, AW Parker, D Prabhakaran, R Coldea

**Topological triplon modes and bound states in a Shastry-Sutherland magnet**

NATURE PHYSICS, **13**, 736-741 (2017)

D Koyama, PM Donaldson, AJ Orr-Ewing

**Femtosecond to microsecond observation of the photochemical reaction of 1,2-di(quinolin-2-yl)disulfide with methyl methacrylate**

PHYSICAL CHEMISTRY CHEMICAL PHYSICS, **19**, 12981-12991 (2017)

G Hithell, M Gonzalez-Jimenez, GM Greetham, PM Donaldson, M Towrie, AW Parker, GA Burley, K Wynne, NT Hunt

**Ultrafast 2D-IR and optical Kerr effect spectroscopy reveal the impact of duplex melting on the structural dynamics of DNA**

PHYSICAL CHEMISTRY CHEMICAL PHYSICS, **19**, 10333-10342 (2017)

H El Moll, FA Black, CJ Wood, A Al-Yasari, AR Marri, IV Sazanovich, E Gibson, J Fielden

**Increasing p-type Dye Sensitised Solar Cell Photovoltages using Polyoxometalates**

PHYSICAL CHEMISTRY CHEMICAL PHYSICS, **19**, 18831-18835 (2017)

PA Summers, JA Calladine, N Ibrahim, KP Kusumo, CA Clark, X Sun, ML Hamilton, M Towrie, J McMaster, M Schröder, MW George

**Probing the use of long lived intra-ligand  $\pi-\pi^*$  excited states for photocatalytic systems: A study of the photophysics and photochemistry of  $[\text{ReCl}(\text{CO})_3(\text{dppz}-(\text{CH}_3)_2)]$**

POLYHEDRON, **123**, 259-264 (2017)

A Beeby, R Gameson, C Nicholson, AW Parker  
**Aldred's Red Gloss**

THE LINDISFARNE GOSPELS: NEW PERSPECTIVES (2017)

D Kekilli, CA Petersen, DA Pixton, DD Ghafoor, GH Abdullah, FSN Dworkowski, MT Wilson, DJ Heyes, SJO Hardman, LM Murphy, RW Strange, NS Scrutton, CR Andrew, MA Hough

**Engineering proximal vs. distal heme-NO coordination via dinitrosyl dynamics: implications for NO sensor design**

CHEMICAL SCIENCE, **8**, 1986-1994 (2017)

CJ Cardin, JM Kelly, and SJ Quinn

**Photochemically active DNA-intercalating ruthenium and related complexes – insights by combining crystallography and transient spectroscopy**

CHEMICAL SCIENCE, **8**, 4705-4723 (2017)

AJ Orr-Ewing

**Taking the plunge: chemical reaction dynamics in liquids**

CHEMICAL SOCIETY REVIEWS, **46**, 7597-7614 (2017)

MNR Ashfold, M Bain, CS Hansen, RA Ingle, TNV Karsili, B Marchetti, and D Murdock

**Exploring the Dynamics of the Photoinduced Ring-Opening of Heterocyclic Molecules**

JOURNAL OF PHYSICAL CHEMISTRY LETTERS, **8**, 3440-3451 (2017)

Y Xiong, A Vargas Jentzsch, JWM Osterrieth, E Sezgin, IV Sazanovich, K Reglinski, S Galiani, AW Parker, C Eggeling, HL Anderson

**Spironaphthoxazine switchable dyes for biological imaging**

CHEMICAL SCIENCE, **9**, 3029-3040 (2018)

MD Peeks, CE Tait, P Neuhaus, GM Fischer, M Hoffmann, R Haver, A Cnossen, JR Harmer, CR Timmel, and HL Anderson

**Electronic Delocalization in the Radical Cations of Porphyrin Oligomer Molecular Wires**

JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **139**, 10461-10471 (2017)

## OCTOPUS

V Pereno, D Carugo, L Bau, E Sezgin, J Bernardino de la Serna, C Eggeling, E Stride

**Electroformation of Giant Unilamellar Vesicles on Stainless Steel Electrodes**

ACS OMEGA, **2**, 994-1002 (2017)

K Scherer, R Bisby, S Botchway, A Parker

**New Approaches to Photodynamic Therapy from Types I, II and III to Type IV Using One or More Photons**

ANTI-CANCER AGENTS IN MEDICINAL CHEMISTRY, **17**, 171-189 (2017)

SH Jones, MD King, AD Ward, AR Rennie, AC Jones, T Arnold  
**Are organic films from atmospheric aerosol and sea water inert to oxidation by ozone at the air-water interface?**

ATMOSPHERIC ENVIRONMENT, **161**, 274-287 (2017)

K Chan, E Garcia Gonzalez, S Padilla-Parra, J Bernardino de la Serna

**Well-Characterised Time-Gated Detector Photon Flux Resolves the Ultrastructure of DNA-Damage Nuclear Bodies with G-STED Nanoscopy**

BIOPHYSICAL JOURNAL, **112**, 141a (2017)

SR Needham, LC Zanetti-Domigues, A Arkhipov, VP Mysore, D Korovesis, SK Roberts, CJ Tynan, DJ Rolfe, M Hirsch, A Lajevardipour, AH Clayton, PJ Parker, Y Shan, DE Shaw, ML Martin-Fernandez

**Oligomerization of the Epidermal Growth Factor Receptor Organizes Kinase-Active Dimers into Competent Signaling Platforms**

BIOPHYSICAL JOURNAL, **112**, 26a (2017)

M Aron, R Browning, D Carugo, E Sezgin, J Bernardino de la Serna, C Eggeling, E Stride

**Spectral imaging toolbox: segmentation, hyperstack reconstruction, and batch processing of spectral images for the determination of cell and model membrane lipid order**

BMC BIOINFORMATICS, **18**, 254 (2017)

H Ge, PJ Riss, V Mirabello, DG Calatayud, SE Flower, RL Arrowsmith, TD Fryer, Y Hong, S Sawiak, RM Jacobs, SW Botchway, RM Tyrrell, TD James, JS Fossey, JR Dilworth, FI Aigbirhio, SI Pasco  
***Behavior of Supramolecular Assemblies of Radiometal-Filled and Fluorescent Carbon Nanocapsules In-Vitro and In-Vivo***  
 CHEM, **3**, 437-460 (2017)

M Li, H Ge, V Mirabello, RL Arrowsmith, G Kociok-Kohn, SW Botchway, W Zhu, SI Pasco, TD James  
***Lysosomal tracking with a cationic naphthalimide using multiphoton fluorescence lifetime imaging microscopy***  
 CHEMICAL COMMUNICATIONS, **53**, 11161-11164 (2017)

B Mao, DG Calatayud, V Mirabello, N Kuganathan, H Ge, RMJ Jacobs, AM Shepherd, JA Ribeiro-Martins, J Bernardino de la Serna, BJ Hodges, SW Botchway, SI Pasco  
***Frontispiece: Fluorescence-Lifetime Imaging and Super-Resolution Microscopies Shed Light on the Directed- and Self-Assembly of Functional Porphyrins onto Carbon Nanotubes and Flat Surfaces***  
 CHEMISTRY: A EUROPEAN JOURNAL, **3**, 437-460 (2017)

C Tiede, R Bedford, SJ Heseltine, G Smith, I Wijetunga, R Ross, D AlQallaf, AP Roberts, A Balls, A Curd, RE Hughes, H Martin, SR Needham, LC Zanetti-Domingues, Y Sadigh, TP Peacock, AA Tang, N Gibson, H Kyle, GW Platt, N Ingram, T Taylor, LP Coletta, I Manfield, M Knowles, S Bell, F Esteves, A Maqbool, RK Prasad, M Drinkhill, RS Bon, V Patel, SA Goodchild, M Martin-Fernandez, RJ Owens, JE Nettleship, ME Webb, M Harrison, JD Lippiat, S Ponnambalam, M Peckham, A Smith, PK Ferrigno, M Johnson, MJ McPherson, DC Tomlinson  
***Oligomerization of the Epidermal Growth Factor Receptor Organizes Kinase-Active Dimers into Competent Signaling Platforms***  
 ELIFE, **6**, e24903 (2017)

JR Shewring, AJ Cankut, LK McKenzie, BJ Crowston, SW Botchway, JA Weinstein, E Edwards, MD Ward  
***Multimodal Probes: Superresolution and Transmission Electron Microscopy Imaging of Mitochondria, and Oxygen Mapping of Cells, Using Small-Molecule Ir(III) Luminescent Complexes***  
 INORGANIC CHEMISTRY, **56**, 15259-15270 (2017)

MD Vrettas, IY Fung  
***Sensitivity of transpiration to subsurface properties: Exploration with a 1-D model***  
 JOURNAL OF ADVANCES IN MODELING EARTH SYSTEMS, **9**, 1030-1045 (2017)

A Osterrieder, IA Sparkes, SW Botchway, A Ward, T Ketelaar, N de Ruijter, C Hawes  
***Stacks off tracks: a role for the golgin AtCASP in plant endoplasmic reticulum-Golgi apparatus tethering***  
 JOURNAL OF EXPERIMENTAL BOTANY, **68**, 3339-3350 (2017)

S Sreedharan, MR Gill, E Garcia, HK Saeed, D Robinson, A Byrne, A Cadby, TE Keyes, C Smythe, P Pellett, J Bernardino de la Serna, JA Thomas  
***Multimodal Super-resolution Optical Microscopy Using a Transition-Metal-Based Probe Provides Unprecedented Capabilities for Imaging Both Nuclear Chromatin and Mitochondria***  
 JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, **139**, 15907-15913 (2017)

S D'Abrantes, S Gratton, P Reynolds, V Kriechbaumer, J McKenna, S Barnard, D Clarke, SW Botchway  
***Super-Resolution Nanoscopy Imaging Applied to DNA Double-Strand Breaks***  
 RADIATION RESEARCH, **189**, 19-31 (2017)

M Fritzsche, RA Fernandes, VT Chang, H Colin-York, MP Clausen, JH Felce, S Galiani, C Erlenkämper, AM Santos, JM Heddleston, I Pedroza-Pacheco, D Waithe, J Bernardino De La Serna, BC Lagerholm, T Liu, T Chew, E Betzig, SJ Davis, C Eggeling  
***Cytoskeletal actin dynamics shape a ramifying actin network underpinning immunological synapse formation***  
 SCIENCE ADVANCES, **3**, e1603032 (2017)

A Raza, HE Colley, E Baggaley, IV Sazanovich, NH Green, JA Weinstein, SW Botchway, S MacNeil, JW Haycock  
***Oxygen Mapping of Melanoma Spheroids using Small Molecule Platinum Probe and Phosphorescence Lifetime Imaging Microscopy***  
 SCIENTIFIC REPORTS, **7**, 10743 (2017)

E Garcia, J Bernardino de la Serna  
***Dissecting single-cell molecular spatiotemporal mobility and clustering at focal adhesions in polarised cells by fluorescence fluctuation spectroscopy methods***  
 METHODS, **140**, 85-96 (2018)

## INDIVIDUAL CONTRIBUTIONS AND COLLABORATIVE SCIENCE

H Ahmed, S Kar, G Cantono, D Doria, A Giesecke, D Gwynne, C Lewis, A Macchi, G Nersisyan, K Naughton, O Willi, M Borghesi  
***Optimisation of laser driven proton beams by an innovative target scheme***  
 JOURNAL OF INSTRUMENTATION, **12**, C06025 (2017)

GG Scott, CM Brenner, V Bagnoud, RJ Clarke, B Gonzalez-Izquierdo, JS Green, RI Heathcote, HW Powell, DR Rusby, B Zielbauer, P McKenna, D Neely  
***Diagnosis of Weibel instability evolution in the rear surface density scale lengths of laser solid interactions via proton acceleration***  
 NEW JOURNAL OF PHYSICS, **19**, 43010 (2017)

M Shaikh, AD Lad, G Birindelli, K Pepitone, J Jha, D Sarkar, S Tata, G Chatterjee, I Dey, K Jana, PK Singh, VT Tikhonchuk, P Rajeev, GR Kumar  
***Mapping the Damping Dynamics of Mega-Ampere Electron Pulses Inside a Solid***  
 PHYSICAL REVIEW LETTERS, **120**, 65001 (2018)

A Pirozhkov, T Esirkepov, T Pikuz, A Faenov, A Sagisaka, K Ogura, Y Hayashi, H Kotaki, E Ragoza, D Neely, J Koga, Y Fukuda, M Nishikino, T Imazono, N Hasegawa, T Kawachi, H Daido, Y Kato, S Bulanov, K Kondo, H Kiriya, M Kando  
***Laser Requirements for High-Order Harmonic Generation by Relativistic Plasma Singularities***  
 QUANTUM BEAM SCIENCE, **2**, 7 (2018)

AS Pirozhkov, TZ Esirkepov, TA Pikuz, AY Faenov, K Ogura, Y Hayashi, H Kotaki, EN Ragozin, D Neely, H Kiriya, JK Koga, Y Fukuda, A Sagisaka, M Nishikino, T Imazono, N Hasegawa, T Kawachi, PR Bolton, H Daido, Y Kato, K Kondo, SV Bulanov, M Kando

**Burst intensification by singularity emitting radiation in multi-stream flows**

SCIENTIFIC REPORTS, **7**, 17968 (2017)

H Ahmed, S Kar, G Cantono, P Hadjisolomou, A Poye, D Gwynne, CLS Lewis, A Macchi, K Naughton, G Nersisyan, V Tikhonchuk, O Willi, M Borghesi

**Efficient post-acceleration of protons in helical coil targets driven by sub-ps laser pulses**

SCIENTIFIC REPORTS, **7**, 10891 (2017)

W Cayzac, A Frank, A Ortner, V Bagnoud, MM Basko, S Bedacht, C Bläser, A Blažević, S Busold, O Deppert, J Ding, M Ehret, P Fiala, S Frydrych, DO Gericke, L Hallo, J Helfrich, D Jahn, E Kjartansson, A Knetsch, D Kraus, G Malka, NW Neumann, K Pépitone, D Pepler, S Sander, G Schaumann, T Schlegel, N Schroeter, D Schumacher, M Seibert, A Tauschwitz, J Vorberger, F Wagner, S Weih, Y Zobus, M Roth

**Experimental discrimination of ion stopping models near the Bragg peak in highly ionized matter**

NATURE COMMUNICATIONS, **8**, 15693 (2017)

R Gray, R Wilson, M King, SDR Williamson, R Dance, C Armstrong, C Brabetz, F Wagner, B Zielbauer, V Bagnoud, D Neely, P McKenna

**Enhanced laser-energy coupling to dense plasmas driven by recirculating electron currents**

NEW JOURNAL OF PHYSICS, **20**, 33021 (2018)

K Sowoidnich, JH Churchwell, K Buckley, A Goodship, AW Parker, P Matousek

**Spatially offset Raman spectroscopy for photon migration studies in bones with different mineralization levels**

ANALYST, **142**, 3219-3226 (2017)

B Gardner, N Stone, P Matousek

**Noninvasive determination of depth in transmission Raman spectroscopy in turbid media based on sample differential transmittance**

ANALYTICAL CHEMISTRY, **89**, 9730-9733 (2017)

C Conti, A Botteon, C Colombo, M Realini, P Matousek

**Investigation of Heterogeneous Painted Systems by Micro-Spatially Offset Raman Spectroscopy**

ANALYTICAL CHEMISTRY, **89**, 11476-11483 (2017)

P Vandenabeele, C Conti, A Rousaki, L Moens, M Realini, P Matousek

**Development of a Fiber-Optics Microspatially Offset Raman Spectroscopy Sensor for Probing Layered Materials**

ANALYTICAL CHEMISTRY, **89**, 9218-9223 (2017)

A Rousaki, A Botteon, C Colombo, C Conti, P Matousek, L Moens, P Vandenabeele

**Development of defocusing micro-SORS mapping: a study of a 19th century porcelain card**

ANALYTICAL METHODS, **9**, 6435-6442 (2017)

MZ Vardaki, H Sheridan, N Stone, P Matousek

**Determination of Depth in Transmission Raman Spectroscopy in Turbid Media Using a Beam Enhancing Element**

APPLIED SPECTROSCOPY, **71**, 1849-1855 (2017)

A Ghita, P Matousek, N Stone

**High sensitivity non-invasive detection of calcifications deep inside biological tissue using Transmission Raman Spectroscopy**

JOURNAL OF BIOPHOTONICS, **11**, e2016002 (2017)

JA Griffen, AW Owen, D Andrews, P Matousek

**Recent Advances in Pharmaceutical Analysis Using Transmission Raman Spectroscopy**

SPECTROSCOPY, **32**, 37-43 (2017)

DI Ellis, R Eccles, Y Xu, J Griffen, H Muhamadali, P Matousek, I Goodall, R Goodacre

**Through-container, extremely low concentration detection of multiple chemical markers of counterfeit alcohol using a handheld SORS device**

SCIENTIFIC REPORTS, **7**, 12082 (2017)

## CONFERENCE PROCEEDINGS

### ARTEMIS

DT Lloyd, AS Wyatt, R Chapman, C Thornton, P Majchrzak, A Jones, E Springate, K O'Keeffe

**Quantum-Path-Sensitive Inline XUV Interferometry**

High Intensity Lasers and High Field Phenomena 2018 (2018)

### GEMINI

PA Walker, PD Alesini, AS Alexandrova, MP Anania, NE Andreev, I Andriyash, A Aschikhin, RW Assmann, T Audet, A Bacci, IF Barna, A Beaton, A Beck, A Beluze, A Bernhard, S Bielawski, FG Bisesto, J Boedewadt, F Brandi, O Bringer, R Brinkmann, E Brundermann, M Buscher, M Bussmann, GC Bussolino, A Chance, JC Chanteloup, M Chen, E Chiadroni, A Cianchi, J Clarke, J Cole, ME Couprie, M Croia, B Cros, J Dale, G Dattoli, N Delerue, O Delferriere, P Delinikolas, J Dias, U Dorda, K Ertel, A Ferran Pousa, M Ferrario, F Filippi, J Fils, R Fiorito, RA Fonseca, M Galimberti, A Gallo, D Garzella, P Gastinel, D Giove, A Giribono, LA Gizzi, FJ Gruner, AF Habib, LC Haefner, T Heinemann, B Hidding, BJ Holzer, SM Hooker, T Hosokai, A Irman, DA Jaroszynski, S Jaster-Merz, C Joshi, MC Kaluza, M Kando, OS Karger, S Karsch, E Khanzhanov, D Khikhlikha, A Knetsch, D Kocon, P Koester, O Kononenko, G Korn, I Kostyukov, L Labate, C Lechner, WP Leemans, A Lehrach, FY Li, X Li, V Libov, A Lifschitz, V Litvinenko, W Lu, AR Maier, V Malka, GG Manahan, SPD Mangles, B Marchetti, A Marocchino, A Martinez de la Ossa, JL Martins, F Massimo, F Mathieu, G Maynard, TJ Mehrling, AY Molodtsov, A Mosnier, A Mostacci, AS Mueller, Z Najmudin, PAP Nghiem, F Nguyen, P Niknejadi, J Osterhoff, D Papadopoulos, B Patrizi, R Pattathil, V Petrillo, MA Pocsai, K Poder, R Pompili, L Pribyl, D Pugacheva, S Romeo, AR Rossi, E Roussel, AA Sahai, P Scherkl, U Schramm, CB Schroeder, J Schwindling, J Scifo, L Serafini, ZM Sheng, LO Silva, T Silva, C Simon, U Sinha, A Specka, MJV Streeter, EN Svystun, D Symes, C Szwaj, G Tauscher, AGR Thomas, N Thompson, G Toci, P Tomassini, C Vaccarezza, M Vannini, JM Vieira, F Villa, C Wahlstrom, R Walczak, MK Weikum, CP Welsch, C Wiemann, J Wolfenden, G Xia, M Yabashi, L Yu, J Zhu, A Ziegler

**Horizon 2020 EuPRAXIA design study**

8th International Particle Accelerator Conference (2017)

## LASER DEVELOPMENTS

J Smith, TJ Butcher, PD Mason, KG Ertel, S Banerjee, M De Vido, OV Chekhlov, M Divok<sup>1</sup>/<sub>2</sub>, J Pilar, W Shaikh, C Hooker, C Hernandez-Gomez, CB Edwards, JL Collier, A Lucianetti, T Mocek, PJ Phillips, WA Clarkson, RK Shori  
**100J-level nanosecond pulsed Yb:YAG cryo-cooled DPSSL amplifier**  
SPIE Solid State Lasers XXVII: Technology and Devices 2018 (2018)

P Navratil, O Slezak, J Pilar, KG Ertel, M Hanus, S Banerjee, PJ Phillips, J Smith, M De Vido, A Lucianetti, C Hernandez-Gomez, CB Edwards, JL Collier, T Mocek, PD Mason, M Divok<sup>1</sup>/<sub>2</sub>, TJ Butcher, WA Clarkson, RK Shori  
**Characterization of Bivoj/DiPOLE 100: HiLASE 100-J/10-Hz diode pumped solid state laser**  
SPIE Solid State Lasers XXVII: Technology and Devices 2018 (2018)

DT Lloyd, K O'Keefe, AS Wyatt, PN Anderson, D Treacher, SM Hooker  
**Combined visible and near-infrared OPA for wavelength scaling experiments in strong-field physics**  
SPIE Nonlinear Frequency Generation and Conversion: Materials and Devices XVI (2017)

G Korn (Ed.), LO Silva (Ed.), B Rus, P Bakule, D Kramer, J Naylor, J Thoma, M Fibrich, JT Green, JC Lagron, R Antipenkov, J Bartoniček, F Batysta, R Baše, R Boge, S Buck, J Cupal, MA Drouin, M Ďurák, B Himmel, T Havlíček, P Homer, A Honsa, M Horáček, P Hříbek, J Hubáček, Z Hubka, G Kalinchenko, K Kasl, L Indra, P Korous, M Košelja, L Koubíková, M Laub, T Mazanec, A Meadows, J Novák, D Peceli, J Polan, D Snopek, V Šobr, P Trojek, B Tykalewicz, P Velpula, E Verhagen, Š Vyhlička, J Weiss, C Haefner, A Bayramian, S Betts, A Erlandson, J Jarboe, G Johnson, J Horner, D Kim, E Koh, C Marshall, D Mason, E Sistrunk, D Smith, T Spinka, J Stanley, C Stolz, T Suratwala, S Telford, T Ditmire, E Gaul, M Donovan, C Frederickson, G Friedman, D Hammond, D Hiding, G Chériaux, A Jochmann, M Kepler, C Malato, M Martinez, T Metzger, M Schultze, P Mason, K Ertel, A Lintern, C Edwards, C Hernandez-Gomez, J Collier  
**ELI-beamlines: progress in development of next generation short-pulse laser systems**  
SPIE Optics + Optoelectronics, Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers III (2017)

J Hein, P Mason, M Divoký, T Butcher, J Pilař, K Ertel, M Hanuš, M De Vido, S Banerjee, J Phillips, J Smith, I Hollingham, M Muresan, B Landowski, J Suarez-Merchan, A Thomas, M Dominey, L Benson, A Lintern, B Costello, S Tomlinson, S Blake, M Tyldesley, A Lucianetti, C Hernandez-Gomez, C Edwards, T Mocek, J Collier  
**Commissioning of a kW-class nanosecond pulsed DPSSL operating at 105 J, 10 Hz**  
SPIE Optics + Optoelectronics, Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers III (2017)

J Hein, T Butcher, P Mason, S Banerjee, K Ertel, PJ Phillips, J Smith, M De Vido, O Chekhlov, M Divoky, J Pilat, G Priebe, T Toncian, W Shaikh, C Hooker, A Lucianetti, C Hernandez-Gomez, T Mocek, C Edwards, J Collier  
**A 100 J-level nanosecond DPSSL for high energy density experiments**  
SPIE Optics + Optoelectronics, Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers III (2017)

JC Bellum, TB Winstone, ES Field, DE Kletecka  
**Broad bandwidth high reflection coatings for petawatt class lasers: femtosecond pulse laser damage tests, and measurement of group delay dispersion**  
SPIE LASE, High Power Lasers for Fusion Research IV (2017)

M De Vido, KG Ertel, PD Mason, S Banerjee, J Phillips, JM Smith, TJ Butcher, OV Chekhlov, M Divoky, J Pilar, CJ Hooker, W Shaikh, A Lucianetti, C Hernandez-Gomez, T Mocek, C Edwards, J Collier  
**A 100J-level nanosecond pulsed DPSSL for pumping high-efficiency, high-repetition rate PW-class lasers**  
SPIE LASE, Solid State Lasers XXVI: Technology and Devices (2017)

M Galimberti, A Boyle, IO Musgrave, P Oliveira, D Pepler, W Shaikh, TB Winstone, A Wyatt, C Hernandez-Gomez  
**Spectral gain investigation of large size OPCPA based on partially deuterated KDP**  
Plasma Physics by Laser and Applications 2017 (2017)

M De Vido, PD Mason, K Ertel, J Phillips, S Banerjee, J Smith, T Butcher, M Divoky, J Pilar, M Hanus, A Lucianetti, C Hernandez-Gomez, C Edwards, T Mocek, J Collier  
**The first kilowatt average power 100J-level DPSSL**  
IEEE High Power Diode Lasers and Systems Conference 2017 (2017)

K Ertel, S Banerjee, A Boyle, I Musgrave, W Shaikh, S Tomlinson, M De Vido, T Winstone, A Wyatt, C Edwards, C Hernandez-Gomez, J Collier  
**Design study for a kW-class, multi-TW, ps laser**  
Advanced Solid State Lasers 2017 (2017)

Y Tang, D Egan, C Hooker, C Gregory, O Chekhlov, C Hernandez-Gomez, J Collier, R Pattathil  
**Dependence of Compressed Pulse Contrast on Grating Surface Roughness**  
Conference on Lasers and Electro-Optics: Science and Innovations 2017 (2017)

P Mason, M Divoky, T Butcher, J Pilar, K Ertel, M Hanus, M De Vido, S Banerjee, J Phillips, J Smith, A Lucianetti, C Hernandez-Gomez, C Edwards, T Mocek, J Collier  
**The first multi-joule DPSSL with 1 kW average power**  
Conference on Lasers and Electro-Optics Europe & European Quantum Electronics Conference (2017)

## PLASMA PHYSICS

D Del Sorbo, DR Blackman, R Capdessus, K Small, C Slade-Lowther, W Luo, MJ Duff, APL Robinson, P McKenna, Z Sheng, J Pasley, CP Ridgers  
**Ion acceleration with radiation pressure in quantum electrodynamic regimes**  
SPIE Optics + Optoelectronics - Research Using Extreme Light - Entering New Frontiers with Petawatt-Class Lasers III (2017)

K Ronald, D Speirs, M King, T Heelis, S McConville, K Gillespie, R Bingham, C Robertson, A Cross, A Phelps, A Litvak  
**Laboratory experiments simulating electron cyclotron masers in space**  
10th International Workshop on Strong Microwaves and Terahertz Waves - Sources and Applications 2017 (2017)



## ULTRA

GM Greetham, IP Clark, PM Donaldson, IV Sazanovich, M Towrie  
***Next Generation Ultrafast Time-Resolved Infrared Spectroscopy at the Central Laser Facility***  
 Conference on Lasers and Electro-Optics Europe & European Quantum Electronics Conference 2017 (2017)

## VULCAN

DR Rusby, C Brenner, C Armstrong, L Wilson, R Clarke, A Alejo, R Deas, P McKenna, S Kar, D Neely  
***Scaling of X-ray Flux from High-Intensity Laser-Solid Interactions as a Function of Energy***  
 Conference on Lasers and Electro-Optics: Science and Innovations 2017 (2017)

T Robinson, S Giltrap, S Eardley, F Consoli, R De Angelis, F Ingenito, N Stuart, C Verona, RA Smith  
***Electro-optic analysis of the influence of target geometry on electromagnetic pulses generated by petawatt laser-matter interactions***  
 Plasma Physics by Laser and Applications 2017 (2017)

E Dalimier, A Ya Faenov, E Oks, P Angelo, TA Pikuz, Y Fukuda, A Andreev, J Koga, H Sakaki, H Kotaki, A Pirozhkov, Y Hayashi, IY Skobelev, SA Pikuz, T Kawachi, M Kando, K Kondo, A Zhidkov, E Tubman, NMH Butler, RJ Dance, MA Alkhimova, N Booth, J Green, C Gregory, P McKenna, N Woolsey, R Kodama  
***X-ray spectroscopy of super-intense laser-produced plasmas for the study of nonlinear processes. Comparison with PIC simulations***  
 23rd International Conference on Spectral Line Shapes 2016 (2017)

R Briggs, M Suggit, M Gorman, A Coleman, R Heathcote, A Higginbotham, S Patel, J Wark, M McMahon  
***Phase transitions in shock compressed bismuth identified using single photon energy dispersive X-ray diffraction (SPEDX)***  
 Joint 25th AIRAPT / 53rd EHPRG International Conference on High Pressure Science and Technology 2015 (2017)

## INDIVIDUAL CONTRIBUTIONS AND COLLABORATIVE SCIENCE

AG Ghita, N Stone, P Matousek  
***Characterisation of a novel transmission Raman spectroscopy platform for non-invasive detection of breast micro-calcifications***  
 SPIE BiOS - Biomedical Vibrational Spectroscopy 2018: Advances in Research and Industry (2017)

## THESES

## ARTEMIS

Smith, A  
***High energy and high intensity probes of chemical dynamics***  
 PhD Thesis, University of Southampton (2017)

Cabo, A  
***Two-Dimensional Materials: From Basic Research in Transition Metal Dichalcogenides to Technique Development for Graphene Applications***  
 PhD Thesis, Aarhus Universitet (2017)

Hernando, P  
***Attosecond pump-probe methods for measurement of molecular hole dynamics***  
 PhD Thesis, Imperial College London (2017)

## GEMINI

Kasim, M  
***Quantitative optical probing of plasma accelerators***  
 PhD Thesis, University of Oxford (2017)

Scullion, C  
***Investigation of ion acceleration from solid targets driven by ultrashort laser***  
 PhD Thesis, Queen's University Belfast (2017)

## VULCAN

Sadler, J  
***Optimisation and applications of Raman plasma amplifiers***  
 PhD Thesis, Imperial College London (2017)

Raten, N  
***Complex phase space representation of plasma waves: theory and applications***  
 PhD Thesis, University of Oxford (2017)

Ceurvorst, L  
***Relativistic channeling with applications to inertial confinement fusion***  
 PhD Thesis, University of Oxford (2017)

Robinson, T  
***Optically levitated targets as a source for high brightness x-rays and a platform for mass-limited laser-interaction experiments***  
 PhD Thesis, Imperial College London (2017)

Lowe, H  
***Development of a multi keV x-ray backlighter source based on laser irradiation of extended cluster gases***  
 PhD Thesis, Imperial College London (2017)

Giltrap, S  
***Laser-plasma interaction experiments using high energy, high contrast OPCPA lasers***  
 PhD Thesis, Imperial College London (2017)

Padda, H  
***Intra-pulse dynamics of laser-driven ion acceleration in ultra-thin foils***  
 PhD Thesis, University of Strathclyde (2017)

## APPENDICES

---

Wilson, R

*On the role of focal spot size in ultra-intense laser-solid interaction physics*

PhD Thesis, University of Strathclyde (2018)

Butler, N

*Self-generated magnetic fields in intense laser-solid interactions relevant to relativistic plasma astrophysics*

PhD Thesis, University of Strathclyde (2018)

Alejo, A

*Deuteron and Neutron Sources Driven by High-Power Lasers*

PhD Thesis, Queen's University Belfast (2017)

### ULTRA

Coulter, P

*Ultrafast reaction and relaxation dynamics of small molecules in solution*

PhD Thesis, University of Bristol (2018)

Koyama, D

*Ultrafast photochemical reaction dynamics of aromatic sulphur compounds in solution*

PhD Thesis, University of Bristol (2017)

Neri, G

*The electro- and photochemical reduction of CO<sub>2</sub> mediated by molecular catalysts*

PhD Thesis, University of Liverpool (2016)

Gurung, S

*Biophysical & crystallographic studies of DNA i-motifs*

PhD Thesis, University of Reading (2018)

Hithell, G

*Studies of the structure and ultrafast dynamics of DNA using 2D-IR spectroscopy*

PhD Thesis, University of Strathclyde (2017)

Spall, S

*Rhenium and manganese  $\delta$ -diimine tricarbonyls as CO<sub>2</sub> reduction catalysts : insights from novel ligand design*

PhD Thesis, University of Sheffield (2017)

Cletheroe, L

*Photosensitizing diiron hydrogenase mimics: excited state dynamics*

PhD Thesis, University of Sheffield (2017)

Skewring, J

*Development of luminescent transition metal complexes for correlative light and electron microscopy and super resolution microscopy*

PhD Thesis, University of Sheffield (2017)

McKenzie, L

*Novel transition metal complexes for use as photosensitizers in photodynamic therapy*

PhD Thesis, University of Sheffield (2017)

### OCTOPUS

Shephard, R

*The study of atmospheric reaction chemistry of cloud droplets and aerosol by application of optical trapping and neutron and X-ray scattering*

PhD Thesis, Royal Holloway (2017)