Institution: University of Hull

Unit of Assessment: B8: Chemistry

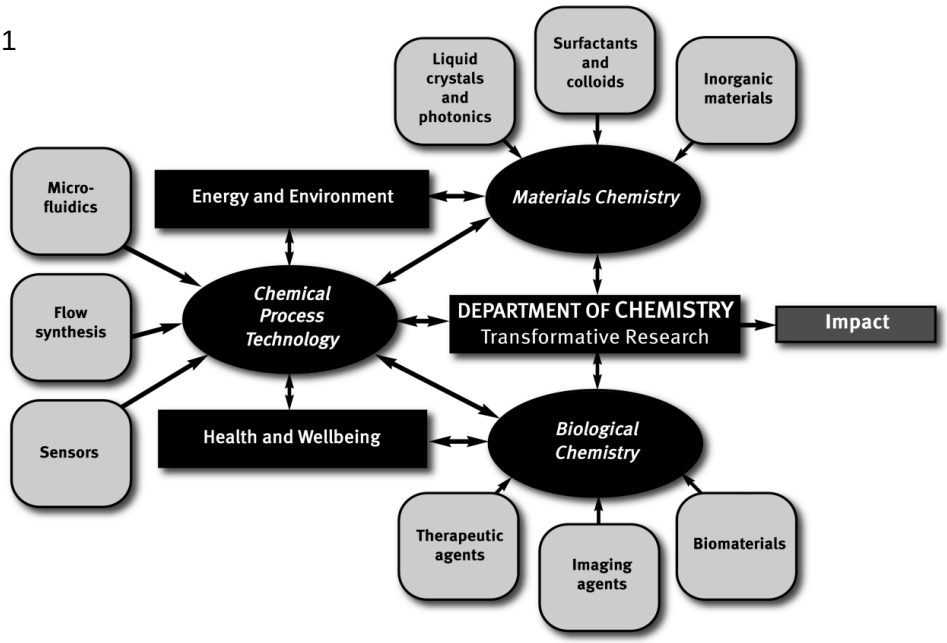
a. Overview

The staff and facilities submitted under UoA 8 are located in the Faculty of Science and Engineering, primarily in the Department of Chemistry. As described in the impact summary, the UoA's fundamental, underpinning research (about 1/3 of total) is progressed to impact through strategic working with partners and end users to innovative applications (about 2/3 of total). This approach aims to provide a sustainable research strategy for the current and future funding environment. In the context of increasing undergraduate student numbers, the Department strategically balances staff workloads to ensure continued delivery of research excellence coupled with high quality, research-informed teaching. To maintain critical mass, research is focussed into three research themes: Materials Chemistry, Biological Chemistry and Chemical Process Technology. These themes were selected in 2004 to build on the distinctive strengths of Hull Chemistry (mainly Materials and Process Technology), to align with the University inter-disciplinary priorities (mainly Biological Chemistry) and to achieve impact.

b. Research strategy

Hull Chemistry has expertise fully spanning the "traditional" sub-groupings (analytical, inorganic, organic, and physical chemistry) but strategically focuses its research into the three forward-looking themes which not only cover the chemistry sub-groupings but also extend into disciplines outside chemistry and align with University priorities (Figure 1).

Figure 1



Hull Chemistry's vision outlined above is implemented through five strategic objectives:

1. Focus on the three research themes (Materials Chemistry, Biological Chemistry and Chemical Process Technology) through targeting resources and providing an effective and supportive operational research environment for staff and students. Sections (c) and (d) give examples of targeted investment in the theme areas through appointing staff, upgrading laboratories and equipment, and PhD Studentships. One example is that an investment of £300 k in a laboratory refurbishment, the appointment of Dr Adawi and the allocation of four PhD studentships in the Liquid Crystals and Photonics research Group (part of the Materials theme) has subsequently resulted in 14 grants over the REF period plus the development of two successful spin-out companies.

2. Foster research excellence by bench-marking research activity and holding regular research mentoring/planning/review meetings with individual staff to set targets, identify areas for development and plans to overcome obstacles. This is described fully in section (c) but one example is Dr Pamme where this approach (i) enabled planning for maternity leave, (ii) led to the identification of biomedical applications of her magnetic flow chemistry, and (iii) fostered a collaboration with Dr Archibald that resulted in 3 new grants and her promotion to Reader.

3. Enable research through the active Departmental Research Forum that meets regularly to foster collaboration between staff and to support the research process and highlight alternative funding routes. This strategy has led to new collaborative projects with different funding bodies. For example, Prof. Paunov in the Surfactants and Colloids section has diversified into interdisciplinary areas and with BBSRC funding recently developed a new family of selective antimicrobial agents based on synthetic colloid particles, which can be custom-designed to recognize the shape of specific kinds of microbes and 'de-activate' them.

4. Facilitate interdisciplinary research through the University themes of "Health and Wellbeing" and "Energy and the Environment". Sections (c) and (d) give examples of University targeted investment in interdisciplinary research. Hull Chemistry has invested in 3 academic staff and £300 k laboratory upgrades in these areas and the Department is at the centre of the developments with Dr Archibald expanding his research into imaging and therapeutic agents to become Director of the new Positron Emission Tomography (PET) Research Centre, which involves chemists, biologists, medics and engineers and is backed by the Daisy Charity. EU translational funding of £235 k has been awarded recently to this interdisciplinary team.

5. *To maximise research impact by working with end users and industrial partners.*
The Department fosters collaboration with industrial research users, mainly via the Institute for Chemistry in Industry (through training courses, industrial student placement programmes, industrial research seminars) and the University Knowledge Exchange, as described in sections (d) and (e). The success of this approach is illustrated by the Surfactant and Colloids section which currently has over 10 active research collaborations with regional, national and international companies, and a recent success is highlighted in one of the impact case studies.

The research strategy of the UoA maps directly on the University of Hull's Strategic Plan 2011-2015 and forward to 2019. As well as targeting interdisciplinary research themes, the plan has led to the University's Academic Investment Initiative which aims to enhance research performance by selective staff appointments, staff development and mentoring plus regular bench-marking of academic performance and target setting. Chemistry staff on research and teaching contracts are expected to achieve research outputs equivalent to a rating of 3* or higher and to win research funding amounting to a minimum annual spend of £100 k. Hull Chemistry actively manages staff workload to ensure an appropriate balance between research and teaching, particularly important for the future as a result of the recent expansion of undergraduate students (from 371 in 2007/8 to 598 in 2012/3). Through a series of annual meetings, individual staff workloads are reviewed, discussed and adjusted with mutually agreed contractual changes as required to ensure continuing enhancement of both teaching and research. Over the REF period, three chemistry staff have moved from Research & Teaching to Teaching & Scholarship contracts.

Clear advances have been made against weaknesses identified in the RAE 2008

- *The Molecules for Health Theme (now Biological Chemistry) was considered to be weak.* This has been tackled at Department and University level, by (i) developing staff within the section, (ii) making new appointments (Prof. Evans and Dr Lorch), (iii) by the University's £7 m investment in its "Health and Wellbeing" interdisciplinary research theme (see sections c/d).
- *The number of PhDs awarded was considered to be low.* Through the Departmental Research Forum staff were encouraged to identify different funding opportunities for studentships. In the REF period the number of awarded PhD degrees has increased from 17 in 2008/9 to 20 in 2012/3 (see table in c). This has been achieved by recruiting overseas students, attracting industrial funding for studentships and by bidding for University interdisciplinary studentships. This modest increase was achieved against the backdrop of RCUK changes in funding students, i.e. (i) the loss of DTA studentships due to changes in the funding threshold, and, (ii) the termination of project studentships.
- *The research income/FTE/year was considered low.* Since the RAE 2008 the UK funding environment has dramatically changed with the Research Councils' stated aims being to focus funding with strategic partners. Adopting our five strategic objectives we have been able to maintain and slightly increase the average research income/FTE/Year from £77,647 in RAE period to £79,129 for the REF period. The impact template illustrates how RCUK and EU investment have been followed by increased translational and commercial investment. Already in 2013, £677,314 of new funding has been obtained, including from new grant sources for our UoA such as the MRC.

Beyond REF 2014 and the current University planning period, our vision for the future is the continuing development of Hull's distinctive areas of research strength with focus on taking new fundamental science through to end-user impact and widening impact through inter-disciplinary collaboration. Staff will be encouraged to collaborate with academic and industrial partners to both develop new science and translate research impacts whether that may be new products, health developments or environmental improvements. Engagement in interdisciplinary research will continue to be encouraged where appropriate, especially with the University investment in the areas of "Health and Wellbeing" and "Energy and the Environment". Chemistry is also working very closely with Engineering to build up the new Chemical Engineering Department and this collaboration will lead to new opportunities linking with the chemical industry around the Humber Estuary and wider. Furthermore, the Department will take advantage of the University's Academic Investment Initiative to monitor and support staff in working towards bench-marked targets for outputs and research funding.

c. People, including (30%)

i. Staffing strategy and staff development

Since 2008 the University has strongly supported the UoA, allowing staff replacements and investing in new appointments such that in Chemistry the number of academic staff has increased from 25 in 2008 to 27 in 2013 and the University has made 5 appointments to Physics since 2008, 3 of whom work in areas relevant to the UoA.

Strengthening Biological Chemistry (previously Molecules for Health)

Prof. Evans' appointment was a specific investment to address the need for leadership within the previous Molecules for Health theme as highlighted in the RAE 2008 feedback. The theme has been redefined as Biological Chemistry, which retains research in Molecules for Health (Imaging and Therapeutic agents) and extends to Biomaterials. Prof. Evans has exploited the properties of the *Cowpea mosaic virus* (CPMV), a naturally occurring pseudo-spherical nanoparticle for use in (bio)nanoscience. He has shown that inorganic, organometallic, organic and biomolecular moieties can be readily chemically linked to the virus surface and recently that CPMV-drug conjugates can target and kill cancer cells at a lower dose than the free drug. His research is complementary to Dr Mackenzie's work on the exploitation of *sporopollenin* microcapsules (extracted from pollen and spores) which has led to the commercial spin-off company Sporomex.

The leadership within the Biological Chemistry theme has been further strengthened by the development of existing staff, including the award of a Personal Chair to Prof. Boyle, a Readership for Dr Archibald who is the director of the Positron Emission Tomography Research Centre and a Senior Lectureship for Dr Boa (Medicinal Chemistry). Sustainability has been addressed with the appointment of Dr Lorch who works on the utilisation of NMR in structural biology.

Sustainability and strengthening fundamental chemistry

Staff have also been recruited to underpin a sustainable level of activity in fundamental chemistry, a concern raised in the 2008 RAE feedback. One such appointment was Dr Benoit whose research involves developing a realistic theoretical description of the vibrational properties of large molecules adsorbed on surfaces. He is developing new hybrid electronic structure techniques and quantum nuclear dynamics methodologies to run in grid-computing environments.

Inorganic Materials Chemistry has been strengthened by the appointments of Prof. Redshaw and Dr Kyriakou, an early career member of staff. These appointments also support the University's strategic developments within the "Energy and the Environment" theme and Chemical Engineering. Prof. Redshaw has prepared and fully characterized (partly with the synchrotron radiation source at the ALS, Berkeley) new metal organic frameworks (MOFs). Gas uptake studies, in collaboration with Fudan University (China), are demonstrating CO_2 uptake. Novel lithiated calixarene systems have also been prepared and gas uptake studies, in collaboration with the University of Texas (Austin), are revealing very interesting 'two-stage' O_2 uptake. Dr Kyriakou is working in the area of heterogenous catalysis for fine chemicals production and for asymmetric synthesis.

Staff appointed in Physics & Mathematics also contribute to interdisciplinary research for the Chemistry UoA including Dr Adawi (Liquid Crystals and Photonics) who has developed new materials to obtain integrated nano-lasers and light sources with ultra-high efficiency and Dr Kemp, who sits in the Chemical Process Technology theme and tackles the challenging problem of addressing ultra-small devices using a simple and versatile patterning procedure for the fabrication of closely spaced electrical interconnects with high aspect ratios.

The strategy of appointing and developing early career staff has continued as the success of this approach can be demonstrated with regards to the career development of Drs Pamme and Wadhawan. Recent appointments to Research & Teaching continuing contracts include three successful research fellows: Dr Lorch (Biological Chemistry), Dr Horozov (Colloidal Chemistry) and Dr Georgiou (synthesis and characterisation of novel polymers and gels). The latter pair of appointments are designed to ensure sustainability in the Surfactants and Colloids section. Hull Chemistry is about to advertise for three new lecturing staff in analytical, organic and physical chemistry, along with two professors to ensure continuity and to ensure good staff-student ratios.

Staff training and development

Early career staff have been extensively supported by both Departmental and University measures. These include the allocation of research and teaching mentors, provision of a studentship and start-up funds, and a light teaching and administration load for the first few years. For example, our new member of staff, Dr Kyriakou, has been allocated £20 k start-up funds and a University PhD studentship. Furthermore, the staff development unit at the University provides comprehensive training for all new staff with induction courses, training for research supervisors, guidance on applying for research funding and advice about writing grants, preparing for Fellowship of the Higher Education Academy, and the Postgraduate Certificate in Higher Education which must be completed by those without considerable teaching experience. For more established staff, periods of study leave are available. The Department aims to be inclusive, develop careers and be mindful when organising meetings and events, as many staff have young families and caring responsibilities. The University is committed to equality of opportunity and diversity for staff and students and has developed an action plan to implement the single equality scheme which is backed up by staff training. The University has recently submitted an application for the Athena SWAN Bronze award, for which the steering committee was chaired by Prof. John Hay (PVC for Research and Enterprise) and an action plan was drawn up by a working party chaired by Prof. Greenway. Within the current senior staff of the UoA there are three females; Prof. Greenway is Head of Chemistry, Prof. Overton is Deputy and Prof. O'Neill is Head of Physics & Mathematics. However, there is no room for complacency and there are still issues with regards to recruitment and workload balance. To enhance the career development of post-doctoral researchers the University has developed, in consultation with staff, an action plan for the implementation of the Concordat to Support the Career Development of Researchers. Specific training has been developed for this group of staff, for example in entrepreneurial skills, applying for Fellowships and preparing CVs. At Departmental level individuals' skills are developed, for example Dr Charlotte Wiles and Dr Kirsty Shaw were PhD students within the Chemical Process Technology theme. Dr Shaw supervised undergraduate and postgraduate taught research projects and developed independent research themes with published outcomes, leading to a lecturing position at Manchester Metropolitan University. Dr Wiles chose to stay with full time research and is now employed by the spin-out company Chemitrix BV recently having been promoted to CEO.

ii.Research students

The University Graduate School is both the administrative centre for postgraduate research and a resource, with its own IT and common rooms. It liaises with all University Faculties and Departments and has recently introduced a rigorous monitoring of research students' progress with recorded monthly meetings followed up by six-monthly review meetings to ensure good completion rates. This is valuable for the Department because an increase in international students who have family responsibilities and often have four or five years of funding has led to some students taking longer to complete their PhDs (four year submission rate 72% for 2011-12). The Graduate School also delivers continuing professional development for supervisors, and coordinates an established postgraduate certificate which students must achieve to provide evidence of their research and employability skills, with the Graduate School providing generic modules such as 'Managing your Research Degree,' and 'Enterprise and Entrepreneurship Skills'. An annual 'PhD Experience' conference, organised by students, is hosted by the Graduate School and a Graduate Virtual Research Environment has assembled stories of researchers and research students enabling access to over 200 short videos illustrating individual research achievements and advice on the research degree journey. The Faculty of Science and Engineering holds a PhD showcase each year and in 2013 this was held in central Hull to engage with industry and the general public.
Dr Francesconi, the Departmental postgraduate tutor, manages recruitment and facilitates student engagement, training, supervision, progress and mentoring within the University framework. The

final year undergraduate research project is a successful introduction to chemical research (six peer reviewed publications from 2011-2012 cohorts). We aim to recruit postgraduate students from the best final year undergraduates and our wider focus is to recruit the best candidates nationally and internationally. The Department has created its own personal development modules based on the Royal Society of Chemistry scheme and this will evolve with the University taking up the Vitae Researcher Development Framework (RDF) published in 2010. Student progress is carefully monitored within the Department following the University scheme with the expectation that students produce reports and have oral examinations at the 10 and 22 month stage to ensure they are prepared for writing their thesis and have experience of oral examinations.

PhD students in UoA	2008/09	2009/10	2010/11	2011/12	2012/13
registered PhD students	39	34	50	65	72

There are currently 72 PhD research students within the UoA with 20 PhDs awarded in 2012/3. High quality students continue to be recruited despite the changes in funding models, with students being attracted with Industrial and University Scholarships. Industrial studentships support fundamental research in applied areas especially in the Surfactants and Colloids section whereas University Scholarships are used by the Faculty to support new appointees and staff are also given the opportunity to bid for a number of these University Scholarships each year to support strategic developments. The Department has continuing relationships with Saudi Arabia, Iraq, Nigeria and other countries, through which we recruit international students, mainly through personal contacts (including past students) and University level collaborations. Recently there has been a large cohort of Saudi students researching mainly in Analytical and Materials Chemistry; these students will often have obtained a taught MSc from Hull or another UK University.

Research students are incorporated within teams in the research themes to provide a supportive doctoral training environment. All students have at least two supervisors and students are also encouraged to support each other in terms of developing skills and ideas. In addition to the Departmental seminar programme, the research themes hold weekly seminar meetings with presentations and discussions. Further *ad hoc* seminars are held with presentations from visiting researchers and the Microfluidics section has monthly literature seminars. This approach provides a critical mass of researchers enabling the students to develop appropriate research skills and ensuring continuity of supervision. Students are involved in appropriate translational aspects of research and encouraged to consider wider career opportunities. The Department also provides national postgraduate training such as an EPSRC funded Liquid Crystal Training Workshop each January led by Dr Hird.

d. Income, infrastructure and facilities (30%)

In developing a sustainable strategy the Department has acknowledged changes in the funding bodies' strategies with, for example, the EPSRC developing strategic relationships with 23 research-intensive universities based on their research income. As the University of Hull is not currently in this category Hull Chemistry has implemented five strategic objectives (section b) to develop a sustainable research model with diverse income streams. Examples of how the strategy led to research funding are provided below for each objective.

1. Prof. Mehl has obtained both RCUK and EU funding in the areas of new materials including non-display applications for liquid crystals, fundamental studies of unusual molecular architectures and nanotechnology, encompassing chemical physics as well as synthetic chemistry. In addition, Prof. O'Neill and Prof. Kelly have led the way internationally in combining liquid crystal and organic semiconductor technologies for improved displays compatible with low-cost and scalable manufacturing with both RCUK and industrial funding.
2. In Biological Chemistry Prof. Boyle has increased his research income from £350 k in 2008 to £863 k in 2013 for a longstanding interest in targeted photodynamic therapy. Building on projects funded by the Wellcome Trust and the EU, an anti-angiogenic antibody conjugated with photosensitisers has been shown to cure two model cancers *in vivo*. He has also diversified by developing tools for studying the effects of reactive oxygen species (ROS) and oxidative stress in biological systems, utilising EPSRC funding to develop a novel class of intracellular nanoprobes for measuring cellular responses to intracellular ROS.
3. Dr Wadhawan in the Sensors section works in the area of electrochemistry and has developed interdisciplinary translational research supported by NHIR funding that incorporates electrochemical sensors into nasogastric tubes for babies.

4. A major focus of the Microfluidics section, led by Prof. Haswell, is lab-on-a-chip technology for point of care devices and in particular the real world interface to these devices. Working with engineers and biomedics he has two TSB funded projects to develop lab-on-a-chip devices which can receive real world samples, perform multiple on-device processing and generate quantifiable data for a range of sample types including blood, urine and saliva. Further interdisciplinary research in this area includes industrial funded research by Dr Pamme (bioMerieux) and environmental applications of lab-on-a-chip (EPSRC funded) by Prof. Greenway.
5. Professors Fletcher and Binks carry out fundamental research in the Surfactants and Colloids section and their strong reputation means they attract substantial industrial funding from a wide range of collaborators (GlaxoSmithKline, NalcoExxon, Lubrizol, Syngenta, Nestlé, Rich, FrieslandCampina, Shiseido, Unilever and Luck Goldstar). Since 2008 they formulated dry oil powder following on from their work on dry water, discovered particle-stabilised oil foams originating from surfactant molecules and developed particles which are omniphobic, allowing the preparation of oil liquid marbles and oil foams. This has led to work on particle-stabilised emulsions using edible ingredients (fats and proteins) for food applications.

The UoA occupies 7042 m^2 of space in the Chemistry Building and the adjacent Ferens Building and has a link through to the new interdisciplinary Allam Building, along with space in Physics & Mathematics. The University has utilised HEFCE funding to provide a continuing programme of research and teaching laboratory refurbishment for the UoA (£1.8 m). The Department and Faculty have a policy of providing shared research facilities to maximise utilisation which are charged by a unit fee per sample or on a time basis. As well as the equipment expected in a well-founded laboratory the Faculty Microscopy Suite provides SEM, TEM, AFM/STM, confocal fluorescence and Raman microscopes. The Department also has several NMR instruments including a solid state 500 MHz NMR, single crystal XRD, GC and HPLC- MS and ICP-atomic emission and ICP-MS. The University understands the need for a rolling programme to replace Departmental equipment and a new powder XRD (PANalytical) and a nano-particle analyser (Nanosight) have been purchased in 2012/13. Specialist research apparatus includes matrix isolation facilities (Dr Young), nanosecond voltammetry (Dr Wadhawan), iron Mössbauer spectroscopy (Prof. Evans) and software is available for computational modelling (Comsol Multiphysics and Gaussian). Research and related instrumentation is supported by a senior experimental officer, an experimental officer and 17 technical staff.

The University has supported its research strategy with targeted funding in areas that directly support the UoA. During the REF period a long term goal to enhance translational biomedical research by linking basic science (chemistry / biology / physics / engineering) to medical advances within the University has been facilitated by connecting the School of Biological Sciences with the Department of Chemistry via a new building housing translational research and including researchers from the Hull York Medical School. The Allam Building, which was opened in July 2013, is a £7 m project and has been achieved by government-matched funding with input from the University and a philanthropic donation of £1.5 m. Additional research funding has provided a BiaCore T200 unit and new mass spectrometry equipment (£400 k) based in the Department of Chemistry including a HR QTof LCMSMS with a nano-LC system and full proteomics software suite, a MALDI Tof/Tof MSMS and an HCT Ultra with ETD ion trap LCMSMS.

Charity funding along with University funding (£2 m in total) has been provided to develop the Positron Emission Tomography Research Centre in which Chemistry has a central role and which opened in December 2012. This offers facilities for radiochemistry research including: two bespoke research hot cells (Aquila), a new design self-shielded cyclotron for F-18 production, a Gallium-68 generator, two von Gahlen shielded fume cupboards, a Philips Bioscan Bio-PET/CT scanner, a Philips Bioscan Nano-SPECT/CT scanner and a full range of analytical radiochemistry tools (radioHPLC, radioTLC, wizard counter, LCMSMS). Chemists are developing the novel PET chemistry with the aid of lab-on-a-chip technology and will work with biologists and medics on a two site translational science development with new integrated patient facilities at the Castle Hill Hospital site; bringing discoveries from laboratory bench to clinic.

The University achieved a substantial increase in its allocation under the last round of the Higher Education Innovation Fund (HEIF) and was awarded £1.96 m per annum between 2011-2015, an increase of £630 k per year (£2.52 m overall) demonstrating significant progress at a time when other HEIs have seen a reduction. HEIF funding has contributed to the “Health and Wellbeing”

theme through the University's Centre for Telehealth which brings together expertise from academia, primary and acute care, local authorities, industry and third sector partners to deliver new concepts for service delivery in the NHS and elsewhere. Funding from this route has enabled interdisciplinary research with engineers to provide glass and polymer fabrication facilities for lab-on-a-chip based point-of-care devices for Telehealth.
Under the interdisciplinary "Energy and the Environment" theme, the Centre for Adaptive Science and Sustainability (CASS) was created using HEIF funding (£1.87 m) to promote research and collaboration with industry in the renewable energy and low carbon sectors. Through CASS the UoA is involved with the development of solar fuels and sustainable chemical feedstocks through the White Rose Solar CO_2 consortium involving York, Sheffield and Leeds. For example, Dr Wadhawan designs batteries suitable for the smart grid and develops efficient photogalvanic solar cells. Furthermore, HEIF funding (2012- 2014) has been awarded to exploit Hull-patented organic photovoltaic technology.
The UoA also has strong links with local industry through the Institute for Chemistry in Industry (ICI). Prof. Fletcher is Director of the ICI which runs both training/continuing professional development courses (mainly NEBOSH-accredited courses on Health & Safety) and consultancy/contract measurement services using 3 full-time dedicated staff (in addition to Prof. Fletcher) plus approx. 10-15 contracted staff. Over the REF period the ICI has successfully completed 859 consultancy/contract measurement jobs for a mixture of local, national and international companies, some of which have developed into longer term research projects. The continuing commitment to the ICI's activities are evidenced through (i) investment of £29 k in dedicated thermogravimetric instrumentation (via HEIF3 funding) and (ii) re-siting of the ICI consultancy staff in two dedicated and refurbished laboratories in 2012.

e. Collaboration or contribution to the discipline or research base (20%)
Sustainable UoA research activities depend on international, national and local collaboration with other universities, research institutes and industry. Strong international collaborations through EU and industrial funding (see examples in section b) are backed up with national and regional university collaborations, e.g. Telehealth with the University of York, the White Rose Solar CO_2 consortium and the Northern Sustainable Chemistry Group (NORSC).
Regional collaboration is led by Prof. Kelly's through the Humber Chemical Focus., an industrially led partnership of chemical related industries. KTP funding has been obtained for several projects with regional and national industrial partners (AAK, Analox, Purex, Cobalt, Lambsons and Microgard).
Academic staff collaborate with both international and national partners, not just through jointly funded research projects but also with individual staff collaborations. Prof. Haswell is working with Deakin University, Australia, to develop research strategies. Prof. Paunov is acting as a consultant for the Surfactant Research Chair at the Department of Chemistry of King Saud University at Riyadh, SA. In collaboration they have been awarded a Research Grant for £280 k on medicine delivery using natural biopolymers derived from Saudi sustainable sources. Prof. Redshaw has strong connections with China and has a research laboratory in Chengdu whilst Prof. Evans is actively developing new collaborations with the University of Sao Paulo, Brazil. The Department also has strong connections with France: Dr Wadhawan having been appointed as visiting Professor at the University of Bordeaux (2010) and the University Paris Diderot (2011); Dr Archibald at the University of Brest (2009-10); Dr Mackenzie at University D'Limoges, ESCOM and the University d'Artos. Dr Francesconi held a visiting Professorship at the Univerisidad Complutense Madrid (2011) and Dr Prior is an Adjunct Professor at the University of Chang Mai, Thailand.
The Department also hosts many visitors. The French connection continues with Honorary Prof. Queneau, research director of the synthetic organic chemistry laboratory at the University of Lyon and with the Department hosting 2-3 placement students each summer from the Ecole Nationale Supérieure de Chimie de Rennes since 2005. Other visiting Professors included Prof. Ingrid Fritsch from the University of Arkansas, USA, who spent a six month NSF sabbatical within the Chemical Process Technology theme at Hull and Prof. Aloir Merlo of the Instituto de Quimica, UFRGS, Brazil, a visiting scientist for six months in the Liquid Crystals section. There are also long term collaborations with visiting academics and researchers from the University of Chiang Mai, Thailand both in analytical and inorganic chemistry and Prof. O'Neill has a Royal Society funded international exchange programme with the University of Malaya. Furthermore Prof. Greenway, Dr

Pamme and Dr Wadhawan have provided analytical chemistry research training for researchers from Europe (5), Turkey (1), Tunisia (3), Pakistan (2), India (1), Nigeria (2) and Brazil (3).

Examples of leadership

Academic staff strongly contribute to the Royal Society of Chemistry with Prof. Overton (winner of the RSC Nyholm Prize for Education) being elected as President of the RSC Education Division and Prof. Greenway as President of the Analytical Division. Prof. Greenway has also been Chair of the Analytical Chemistry Trust Fund and steered the projects for joint funded EPSRC/ACTF studentships and later the NERC/ACTF studentships. She championed the development of the new Tom West Fellowships for newly appointed academics and is on the HCUK steering Committee. Prof. O'Neill is a member of the awards committee of the Institute of Physics 2012-2015 and other staff have been/are members of the RSC Dalton Division Council (Prof. Evans, Dr Archibald), Institute of Physics Polymer Physics Group (Dr Buzza), RSC Mössbauer and Inorganic Biochemistry Discussion Groups' Committees (Prof. Evans). Dr Wadhawan is Vice-chair of the Molecular Electrochemistry Division of the International Society of Electrochemistry. More widely, Dr Prior is on the Management and Advisory Panel of the UK National Crystallography Service and Prof. Paunov is a member of the UK Polymer Colloids Forum Committee.

Prof. Binks was awarded the European Colloid and Interface Society-Rhodia Prize for 2011 and the Andre Main Lecturership 2009 from the University of Alberta, Canada. Dr Hird was awarded the Cyril Hilsum Medal of the British Liquid Crystal Society in April 2010 for his contribution to liquid crystals. With regards conference organization; Dr Nicole Pamme is on the organizing committee of the international MicroTAS conference and will chair the 2016 conference; Prof. Haswell is on the steering committee for IMRET. Dr Nigel Young chaired the 2009 Gordon Conference on Chemistry and Physics of Matrix Isolated Species and is a member of the international steering committee for Matrix Isolation. Dr Archibald is organizing a 2014 Dalton Discussion Conference, Metal ions in medical imaging: optical, radiopharmaceutical and MRI contrast, and Prof. Binks was on the advisory panel for the second International Soft Matter Conference 2010. Prof. O'Neill was on the scientific advisory panel for 4th International Conference of Solid State Science and Technology 2012, and was joint coordinator of the Special Symposium on Self-organization in Optoelectronic Materials at the International Liquid Crystal Conference 2012. Prof. Evans was on the organising committee of the RSC Dalton Division Joint Meeting of Interest Groups 2012 and is again for 2014. Early career staff are also encouraged to develop their academic networks, e.g. Dr Georgiou is on the organizing committee for Recent Appointments in Polymer Science and the Nanotheranostics International Conference. Since 2008 staff have given over 50 plenary lectures and 311 invited lectures and industrial seminars at a wide range of prestigious conferences and meetings in the US, Europe, the Far East as well as the UK. Recent highlights include Prof. Binks' keynote lecture at the Particles at Liquid Interfaces ACS Symposium, Baltimore, US in June 2012, Dr Archibald's plenary lecture at GEOCOM-CONCORD, Metabief, France in June 2012, Dr Pamme's invited lecture at the Lab-on-a-Chip World Congress, San Diego, USA, in October 2012 and Prof. Evans' invited lecture at the ACS Spring Meeting, New Orleans, USA, in April 2013.

The number of staff being asked to carry out PhD examinations has increased from 12 in the UK 2008 to 28 in the UK in 2012 as well as external examining for Europe, Canada and Australia. Staff contribute widely to peer review as well as being members of the EPSRC peer review college, staff review for the EU, NERC, Science Foundation Ireland, Health Research Board Ireland, National Science Foundation, French Funders, International Cancer Funders, Czech Academy of Science, Dutch Research Council, FOM, Brookhaven and other bodies. Prof. O'Neill was a panel member of the European Research Council starter grants 2012 and of the King Faisal International Prize for Chemistry 2011 and Prof. Greenway was an Expert Advisor for UNESCO-L'OREAL International Fellowship Programme for Young Women in Life Sciences 2010. Prof. Fletcher was appointed as external assessor for the submission of Queensland University of Technology, Australia, to their research assessment exercise. With regards to academic publishing several staff are, or have been, on editorial boards including Prof. Binks (PCCP [2006-10]), Prof. Fletcher (Surfactant section of Current Opinion in Colloid and Interface Science), Prof. O'Neill (Crystal) and Dr Lorch (International Journal of Biochemistry and Molecular Biology). Analytical staff have wide editorial involvement, notably Prof. Haswell's involvement with Lab-on-a-Chip and the J. Flow Chemistry, Dr Pamme is on the Editorial Board of Bioanalysis and Prof Greenway is on the Advisory Board for Analytica Chimica Acta and Contributing Editor to TRAC.