

RTP	AB							AMS	
<b>Instrument</b>	<b>High Res Cryo TEM</b>	<b>‘Work-horse’ Cryo TEM</b>	<b>Cryo-ultra microtome</b>	<b>DiSPIM</b>	<b>Leica Freeze Plunger</b>	<b>Mass Photometer</b>	<b>Cryo-SEM</b>	<b>15T FTICR</b>	<b>TIMS TOF</b>
FEC Rate (day)	£1,252.11	£608.78	£315.53	£183.24	£216.56	£201.37	£571.16	£2,574.03	£932.80
UKRI Rate	£316.71	£157.90	£135.07	£NA	£105.94	£51.00	£ 124.70	£549.49	£265.31
<b>RTP</b>	<b>BSU</b>					<b>CT</b>	<b>EM</b>		
<b>Instrument</b>	Mice NT (Cage week)	Mice enrich (Cage week)	Mice Trans (Cage week)	Rats (Cage week)	Zebrafish (tank week)	CT Scanners (averaged)	TEM – workhorse	TEM – Atomic Res	SEM
FEC Rate (day)	TRAC - below	TRAC - below	TRAC - below	TRAC - below	TRAC - below	£ 993.75	£737.75	£1,744.66	£687.64
UKRI Rate	£7.91	£13.26	£8.94	£24.72	£7.76	£ 496.46	£209.49	£522.60	£198.36
<b>RTP</b>	<b>EM</b>			<b>Polymers</b>					
<b>Instrument</b>	AFM	FIB-SEM	Ion Milling	GPC	HT GPC	Aq GPC	TGA	DSC	DMA
FEC Rate (day)	£453.38	£676.54	£79.18	£158.80	£140.89	£192.78	£169.54	£140.10	£114.48
UKRI Rate	£179.39	£176.68	£14.11	£35.63	£175.13	£97.83	£74.88	£60.40	£47.84
<b>RTP</b>	<b>Polymers</b>							<b>SC</b>	
<b>Instrument</b>	DLS	Mastersizer	GCFID	GC-MS	Flow NMR	FFF/AR4	Rheometers	Hardware	RSE
FEC Rate (day)	£111.45	£132.97	£80.26	£140.26	£169.00	£474.77	£137.43	See SC Pages	See SC Pages
UKRI Rate	£47.64	£61.67	£43.33	£49.99	£49.83	£203.97	£45.80	See SC Pages	See SC Pages
<b>RTP</b>	<b>Proteomics</b>			<b>Spectroscopy</b>					
<b>Instrument</b>	Orbitrap	Quantiva	Ion Mobility	Raman	UV-Vis	EPR	FTIR Microscope	Fluorescence	Fluorometer
FEC Rate (day)	£ 873.61	£ 305.81	£ 1,032.99	£212.06	£78.66	£182.24	£151.89	£70.18	£89.72
UKRI Rate	£ 380.83	£ 105.61	£ 439.12	£66.81	£30.22	£46.03	£53.73	£18.41	£27.72
<b>RTP</b>	<b>WCUS</b>				<b>XPS</b>	<b>XRD</b>			
<b>Instrument</b>	Ultrafast	Fluorolog	FTIR	Carbide	XPS/UPS	Powder XRD	High Resolution	Single Crystal	SAXS
FEC Rate (day)	£446.57	£273.24	£134.13	£267.83	£ 835.53	£340.46	£344.67	£481.89	£881.48
UKRI Rate	£ 201.46	£ 62.79	£ 46.92	£99.31	£307.41	£94.34	£88.98	£144.16	£268.02

<b>RTP</b>	<b>XRD</b>		
<b>Instrument</b>	<b>XRF</b>	<b>XAFS</b>	<b>ED</b>
FEC Rate (day)	<b>£321.35</b>	<b>£271.63</b>	<b>£1,490.71</b>
<b>UKRI Rate</b>	<b>£102.81</b>	<b>£61.47</b>	<b>£335.21</b>

## **Introduction**

This document has been prepared for staff involved in preparing grant applications involving the use of RTP equipment. A list of the RTP equipment managed by each RTP is given under the individual RTP sections below. Where time allows, please liaise with the individual RTPs to check that the appropriate equipment and scale of use is being captured in the application, as past data can help inform future usage. Occasionally researchers will use cost estimates from previous bids and not update the rates without checking with current staff. This can lead to a mismatch between expected work and actual work that can be performed for the calculated cost. Costs for funders that are not included can be calculated on request. If in doubt or a mistake is seen, please contact us!

## **Operation**

Each RTP operates in a manner that works for the technologies or expertise it provides. For example, CT would normally run samples for users unless they are experts in the technique, whereas EM would usually train users to utilise the equipment themselves. The charging back to grants also therefore varies, with different costing models, with some RTPs being TRAC and others not. Centrally, we keep a record of utilisation broken down by user and machine, typically updated every month. Timesheets are also kept, and managed by the central RTP team, through Vidatum.

## **RTP Staff on grants**

RTP staff can be included on grants where appropriate, with the RSEs and Bioinformaticians as examples of this. RTP staff can also be PI or Co-I on grants, in these cases the staff would be registered on IDEATE and JES in their 'host' department. All costs (and staff time) would still be via the RTPs where appropriate, but this will count as part of the host department's research portfolio.

## **Technical Director of Research Computing**

Dr Matt Ismail is the Technical Director of Research Computing, hosted by the RTPs but leading on an enhanced, more strategic, visible and secure research computing provision to enable world class research at Warwick. Part of this role is ensuring the research computing provision at Warwick (including but going beyond that of the Scientific Computing RTP) underpins the current and future needs of researchers, whilst also integrating with the plans IDG has to ensure a secure computing environment. If bids include new computing architecture or access to external resource, we ask that the Technical Director of Research Computing is consulted.

### **Writing External Use into Grants**

Sustainability (financial, staff, user base and environmental) is becoming increasingly important for UKRI grants. Below are a couple of example texts that could be adapted – however, the RTP team is happy to see if we can advise on any aspect of equipment sharing, industry access, technical staff and sustainability.

#### **WSS/Industry access**

*'This external use is supported and promoted through Warwick Scientific Services (WSS). Industry and HEIs can book equipment, request training sessions or contract investigations to be carried out via this route. Any surplus funds from industry contracts are invested directly back into the RTP/facility. WSS has seen rapid growth and invoiced ~ £850k from 450 external investigations in FY2022/23. Such external use is an increasingly important route for ensuring the sustainability of research infrastructure at Warwick and efficient sharing of equipment and technical expertise.'*

#### **Research Technical Professionals**

There is change across the sector to ensure the visibility, sustainability, recognition and career development of our technical staff. This was initially instigated by the Technician Commitment initiative (which Warwick is a founding signatory), with further drivers from the TALENT Policy Commission. UKRI have also signed up to the Technician Commitment and have started to allow research technical professionals (RTProfs) to apply for grants and asking on bids how technical staff will be supported. For the latter, I have written an institutional perspective below that can be adapted:

*'UoW is a strong supporter and founding signatory of the Technician Commitment. We have published and rolled out a career pathway for technical staff, with a job family that transparently outlines what is expected in technical roles at levels to professorial equivalent. Additionally, we have launched a Technical Specialist Promotional Pathway, only the second of its kind in the UK. We are part of the Research England funded TALENT programme, a project which leads and influences change to advance status and opportunity for technical skills, roles and careers in UK Higher Education and research, as well as the UK Institute for Technical Skills & Strategy, also Research England funded. We have recently led a successful bid to the EPSRC Strategic Technical Platforms (STP) call, which will support the development and opportunities for research technical professionals UK wide through the UK Technology Specialists Network (TSN).'*

#### **Sustainability**

*'All lab based RTPs either have or are in the process of gaining Laboratory Efficiency Assessment Framework (LEAF) bronze status or above.'*

**Advanced Bioimaging (AB)****Director:** Prof Corinne Smith**Manager:** Dr Saskia Bakker**Userbase:** Chemistry, Engineering, SLS, WMS

Advanced Bioimaging provides access to transmission electron microscopy (TEM) for use with biological or soft materials at room temperature and cryo temperatures (Cryo-TEM). It also provides access to preparatory techniques such as the microtome and, to be purchased in 22/23, a mass photometer. The AB RTP is not to be confused with the EM RTP (also has a JEOL 2100plus) or the facilities in WMG. Where appropriate, include a small amount of RTP Manager time to support training, understanding sample preparation, and data analysis support. This should be included as DA and will not include any overheads. Note, the full cost of access will be charged to the department, with of some to all of cost dependant on funder. The difference between the full cost of the work (calculated at efficient use) and the recoverable charge will be the responsibility of the department.

	High Res Cryo TEM (JEOL 2200)	'Work-horse' Cryo TEM (JEOL 2100Plus)	Cryo-ultra microtome	DiSPIM	Leica Freeze Plunger	Mass Photometer (new 22/23)	Cryo-SEM
Staffing costs	£143.01	£98.27	£116.92		£69.64	£51.00	£116.92
Equipment running costs	£173.70	£59.63	£18.15		£36.30	£0.00	£7.78
Depreciation (replacement cost basis)	£774.23	£337.04	£45.11	£150.89	£26.89	£88.15	£311.11
Central Support Charges-Space	£71.07	£68.92	£17.44	£25.02	£16.42	£13.67	£29.31
Central Support Charges- Staff based	£10.56	£7.58	£8.94		£5.48	£4.12	£8.94
<b>Daily cost: accounting basis</b>	<b>£1,172.57</b>	<b>£571.44</b>	<b>£206.55</b>	<b>£175.91</b>	<b>£154.72</b>	<b>£156.94</b>	<b>£474.06</b>
Add: indirect and estates	£161.17	£113.85	£135.36	£0.00	£83.74	£62.23	£135.36
Less: space and staff csc	(81.63)	(76.50)	(26.38)	(25.02)	(21.89)	(17.80)	(38.25)

<b>Daily cost: fEC basis</b>	<b>£1,252.11</b>	<b>£608.78</b>	<b>£315.53</b>	<b>£175.91</b>	<b>£216.56</b>	<b>£201.37</b>	<b>£571.16</b>
<b>Industry rates (machine only – minimum – consult with RTP)</b>	<b>£1,252.11</b>	<b>£608.78</b>	<b>£315.53</b>	<b>£183.24</b>	<b>£216.56</b>	<b>£201.37</b>	<b>£571.16</b>
<b>Daily cost : UKRI</b>	<b>£316.71</b>	<b>£157.90</b>	<b>£135.07</b>	<b>£NA</b>	<b>£105.94</b>	<b>£51.00</b>	<b>£ 124.70</b>
<b>Daily cost: WT</b>	<b>£285.60</b>	<b>£126.79</b>	<b>£103.95</b>	<b>£NA</b>	<b>£84.80</b>	<b>£29.86</b>	<b>£93.58</b>
<b>Usage hours per day</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>

**Advanced Mass Spectrometry (AMS)****Director:** Prof Pete O'Connor**Manager:** Dr Meng Li**Userbase:** Chemistry, Engineering, SLS

AMS provides access to Fourier transform ion cyclotron resonance (FTICR) mass spectrometry. The AMS RTP is not to be confused with the Proteomics RTP which has one similar instrument but a different focus. This should be included as DA and will not include any overheads. Note, the full cost of access will be charged to the department, with of some to all of cost dependant on funder. The difference between the full cost of the work (calculated at efficient use) and the recoverable charge will be the responsibility of the department.

	15T FTICR	TIMS TOF
Staffing costs	£351.20	£213.88
Equipment running costs	£194.29	£51.43
Depreciation (replacement cost basis)	£1,600.00	£428.57
Central Support Charges-Space	£306.05	£153.63
Central Support Charges- Staff based	£28.12	£16.19
<b>Daily cost: accounting basis</b>	<b>£2,479.65</b>	<b>£863.70</b>
Add: indirect and estates	£428.54	£238.92
Less: space and staff csc	(334.17)	(169.82)
<b>Daily cost: fEC basis</b>	<b>£2,574.03</b>	<b>£932.80</b>
<b>Industry rates (machine only)</b>	<b>£2,574.03</b>	<b>£932.80</b>

<b>Daily cost : UKRI</b>	<b>£549.49</b>	<b>£265.31</b>
<b>Usage hours per day</b>	<b>7.5</b>	<b>7.5</b>



**Bioinformatics****Director:** Prof Sascha Ott**Manager:** Richard Stark**Userbase:** Chemistry, Computer Science, Maths, Statistics, WMG, SLS, WMS

This RTP is focused on providing bioinformatics support to the research community at Warwick. The costings are based solely on staff costs due to the nature of the unit and note the differences in contract in the table below (particularly for grants that would allow overheads where staff are on research contracts\*). Each member of staff has a specialism in the data they handle. Please check with Sascha Ott or Richard Stark on if an individual should be named for a grant or a 'pool' bioinformatician included, central RTP team also has details of how much of each individual's time is already included on grants to ensure this is not exceeded. The preference is often for 'unnamed' bioinformaticians to be included as it allows the portfolio of projects to be managed across the team more easily. Timesheets for the staff are kept via Vidatum.

<b>Member of staff</b>	Richard Stark	Chrystala Constantinidou	Paul Brown	Laura Baxter	Nigel Dyer	Matej Medvecký
<b>Contract type</b>	Prof Services	Prof Services	Research	Prof Services	Prof Services	Prof services
<b>FTE in RTP</b>	1.0	1.0	0.5	1.0	0.8	1.0

Note, whilst there are some items of equipment that belong to the RTP to underpin this (ie small server systems and storage), it is not an alternative to the SC RTP for HPC needs.

\*UKRI have published new guidance stating any role can incur overheads, depending on the financial model the institution uses. Therefore, this may change depending on the advice of Finance.

**Biomedical Services Unit (BSU)****Director:** Prof Bruno Frenguelli**Manager:** Sarah Stanley**Userbase:** Chemistry, WMS, SLS

The unit houses rodents (mice and rats) and zebrafish to support research. There are single costs by species, whether the work is to be carried out in the main BSU facility or in the satellite IBRB area. The rates are calculated according to TRAC.

<b>Service</b>	<b>Unit</b>	<b>TRAC rate per week £</b>	<b>WT rate per week £</b>
Mice - non-transgenic	per cage	£7.91	£4.27
Mice - transgenic –environmentally enriched	per cage	£13.26	£4.76
Mice - transgenic (including ear biopsy)	per cage	£8.94	£5.00
Rats	per cage	£24.72	£12.26
Zebra fish	per tank	£7.76	£4.76

**Rates adjusted for the Wellcome Trust based on the 2022/23 budget**

The table shows adjustments from the TRAC rate to the Wellcome Trust rate and the breakdown of the rate calculated for Wellcome Trust. The Wellcome Trust accept and fund access charges for use of equipment but they do not permit inclusion of Central Support Charge, or salaries for staff that are not “dedicated technical staff” in the access rates claimed. Wellcome only permit inclusion of depreciation on equipment used in an animal facility.

Mice - non transgenic	Enriched Cage Mice - transgenic (including ear biopsy)	Mice - transgenic (including ear biopsy)	Rats	Zebra fish - stock
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**Wellcome Trust Rates**

<b>Total costs inc in TRAC charge</b>	£61,676	£13,790	£455,468	£167,091	£347,235
<b>Exclude Space charge</b>	£16,926	£1,128	£96,760	£45,136	£67,704
<b>Exclude salaries - Admin support costs</b>	647	647	5178	1295	5178
<b>Exclude salaries - RTP Director</b>	0	0	18551	3710	14841
<b>Exclude Premises</b>	£634	£63	£5,707	£2,790	£3,805
<b>Exclude Building</b>	9569	6942	71368	28704	39118
<b>Exclude Catering and Management centre</b>					
<b>Exclude Staff related exp - training</b>	585	59	5,268	2,576	3,512
	33,949	9,086	258,343	85,670	220,120

**Wellcome Trust rates**

<b>Technicians/Manager</b>	10999	4311	151966	32322	138708
<b>Equipment (spares and additions), consumables, vets</b>	6390	639	57512	28117	38341
<b>Depreciation (note, permitted for animal facilities)</b>	15925	0	45526	22,442	36,027

**X-ray Computed Tomography (CT)****Director:** Prof Mark Williams**Manager:** Dr Alex Attridge**Userbase:** Chemistry, Physics, Engineering, WMG, SLS, WMS

The CT RTP is unique as it is a facility where 50% of the capacity/costs are for the RTP and 50% remains with WMG. The RTP also includes access to the National Research Facility (NRF) portion of the facility. The access rates for inclusion on grants given below are for the researcher to use the machine and for initial user training.

The RTP (and WMG capacity) are TRAC, with a single cost regardless of instrument for simplicity and to encourage use of the most suitable instrument. These range from workhorse scanners (Nikon XT H 225/320LC), fast scanners for in-situ measurements (TESCAN UniTom XL), high resolution (Zeiss Versa 620) and high power (Nikon 450RT).

	<b>CT Scanner £ per day</b>
Name of funder	Mixed – including catapult and EPSRC
Percent contribution to equipment by funder	n/a
Staff salaries (direct staff)	£ 216.18
Staff salaries (director)	31.20
Staff (Admin)	14.79
Staff related expenditure	-
Maintenance including computing costs	217.15
Other Operating Costs-Consumables	17.14
Catering	-
Central Support Costs- Staff	
Central Support Costs - Space	64.61
Annual depreciation	432.59
<b>Daily rate</b>	<b>£ 993.75</b>
<b>Hours per day</b>	7.5
<b>UKRI daily rate</b>	<b>£ 496.46</b>
<b>Wellcome daily rate</b>	<b>£ 450.47</b>

**Electron Microscopy (EM)****Director:** Prof Richard Beanland**Manager:** Steve York**Userbase:** Chemistry, Physics, Engineering, WMG

Electron Microscopy provides access to transmission electron microscopy (TEM), scanning electron microscopy (SEM) and atomic force microscopy (AFM) typically used for materials characterisation. It also provides access to preparatory techniques such as the focussed ion beam (FIB) SEM and ion milling. The EM RTP is not to be confused with the AB RTP (also has a JEOL 2100plus) or the facilities in WMG. Where appropriate, include a small amount of RTP staff time to support training, understanding sample preparation, and data analysis support. This should be included as DA and will not include any overheads. Note, a cost of access will be charged to the department, regardless of what can be recovered from funder, with the costs included reducing the departmental access charges. The difference between the full cost of the work (calculated at efficient use) and the recoverable charge will be the responsibility of the department.

	<b>Workhorse TEM</b> (JEOL 2100Plus and 2100LaB6)	<b>Atomic Resolution TEM</b> (JEOL ARM200F)	<b>SEM</b> (Zeiss Gemini and Supra incl CL system)	<b>AFM</b> (Bruker Icon)	<b>FIB-SEM</b> (Tescan Amber)	<b>Ion Milling</b> (Gatan PIPs)
Staffing costs	£148.54	£238.73	£143.65	£109.27	£155.31	£9.11
Equipment running costs	£60.95	£283.87	£54.71	£70.12	£21.37	£5.00
Depreciation (replacement cost basis)	£312.50	£889.13	£279.86	£108.33	£270.83	£51.25
Central Support Charges-Space	£83.73	£78.51	£57.17	£29.25	£50.52	£21.11
Central Support Charges- Staff based	£10.95	£18.36	£10.49	£7.71	£11.56	£0.65
<b>Daily cost: accounting basis</b>	<b>£616.68</b>	<b>£1,508.60</b>	<b>£545.87</b>	<b>£324.69</b>	<b>£509.59</b>	<b>£87.12</b>
Add: indirect and estates	£215.75	£332.93	£209.43	£165.65	£229.03	£13.83
Less: space and staff csc	(94.68)	(96.87)	(£67.65)	(36.97)	(62.08)	(21.76)

<b>Daily cost: fEC basis</b>	<b>£737.75</b>	<b>£1,744.66</b>	<b>£687.64</b>	<b>£453.38</b>	<b>£676.54</b>	<b>£79.18</b>
<b>Industry rates (machine only)</b>	<b>£737.75</b>	<b>£1,744.66</b>	<b>£687.64</b>	<b>£453.38</b>	<b>£676.54</b>	<b>£79.18</b>
<b>Daily cost : UKRI</b>	<b>£209.49</b>	<b>£522.60</b>	<b>£198.36</b>	<b>£179.39</b>	<b>£176.68</b>	<b>£14.11</b>
<b>Usage hours per day</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>

**Polymer Characterisation (Polymers)****Director:** Prof David Haddleton**Manager:** Dr Dan Lester**Userbase:** Chemistry, Physics, Engineering, WMG

The Polymer Characterisation RTP has a wide range of size exclusion / gel permeation chromatography (GPCs), thermal analysis (DSC, TGA, DMA) and other material characterisation instruments (well over 20 in total).

<b>TABLE 1/2</b>	<b>GPC (Agilent 1260 – multiple)</b>	<b>High Temperature GPC (Agilent PL220)</b>	<b>Aqueous GPC (Agilent 1260DRi)</b>	<b>TGA (various Mettler Toledo and TA systems)</b>	<b>DSC (Perkin Elmer and TA systems)</b>	<b>DMA</b>
Staffing costs	38.69	£44.76	£44.76	£43.50	£40.89	£38.28
Equipment running costs	32.56	£96.13	£53.07	£31.38	£19.51	£9.56
Depreciation (replacement cost basis)	36.67	£83.33	£36.11	£35.98	£24.55	£15.00
Central Support Charges-Space	10.39	£16.96	£10.60	£22.93	£21.56	£20.18
Central Support Charges- Staff based	3.13	£3.77	£3.77	£3.76	£3.54	£2.91
<b>Hourly cost: accounting basis</b>	<b>121.44</b>	<b>£244.95</b>	<b>£148.32</b>	<b>£136.96</b>	<b>£110.03</b>	<b>£85.94</b>
Add: indirect and estates	50.88	£58.84	£58.84	£58.68	£55.16	£51.64
Less: space and staff csc	-13.52	-20.73	-14.37	(26.69)	-£25.09	-23.09
<b>Daily cost: fEC basis</b>	<b>158.80</b>	<b>£283.06</b>	<b>£192.78</b>	<b>£169.54</b>	<b>£140.10</b>	<b>£114.48</b>
<b>Industry rates (machine only)</b>	<b>£158.80</b>	<b>£140.89</b>	<b>£192.78</b>	<b>£169.54</b>	<b>£140.10</b>	<b>£114.48</b>

Daily cost : UKRI	<b>£35.63</b>	<b>£175.13</b>	<b>£97.83</b>	<b>£74.88</b>	<b>£60.40</b>	<b>£47.84</b>
Usage hours per day	<b>20</b>	<b>20</b>	<b>20</b>	<b>18</b>	<b>13</b>	<b>8</b>

<b>Table 2/2</b>	<b>DLS (Malvern and Anton Paar)</b>	<b>Masterziser (Anton Paar particle size analyser)</b>	<b>GCFID (Shimadzu and Scion)</b>	<b>GC-MS (Shimadzu and Scion)</b>	<b>Flow NMR</b>	<b>Field Flow Fractionator (FFF or AR4)</b>	<b>Rheometers (Anton Paar)</b>
Staffing costs	£37.10	£37.10	£24.64	£24.64	£43.31	£73.91	£38.28
Equipment running costs	£10.54	£24.56	£18.69	£25.35	£6.52	£130.06	£7.52
Depreciation (replacement cost basis)	£15.00	£22.50	£13.33	£66.67	£60.00	£200.00	£40.00
Central Support Charges-Space	£10.05	£13.41	£13.71	£13.71	£4.66	£38.17	£20.18
Central Support Charges- Staff based	£2.74	£2.34	£1.57	£1.57	£3.78	£1.54	£3.31
<b>Hourly cost: accounting basis</b>	<b>£75.43</b>	<b>£99.91</b>	<b>£71.94</b>	<b>£131.94</b>	<b>£118.27</b>	<b>£443.68</b>	<b>£109.29</b>
Add: indirect and estates	£48.81	£48.81	£23.60	£23.60	£59.18	£70.79	£51.64
Less: space and staff csc	-£12.79	-15.75	-15.28	-15.28	-8.45	-39.70	-23.49
<b>Daily cost: fEC basis</b>	<b>£111.45</b>	<b>£132.97</b>	<b>£80.26</b>	<b>£140.26</b>	<b>£169.00</b>	<b>£474.77</b>	<b>£137.43</b>
<b>Industry rates (machine only)</b>	<b>£111.45</b>	<b>£132.97</b>	<b>£80.26</b>	<b>£140.26</b>	<b>£169.00</b>	<b>£474.77</b>	<b>£137.43</b>
Daily cost : UKRI	<b>£47.64</b>	<b>£61.67</b>	<b>£43.33</b>	<b>£49.99</b>	<b>£49.83</b>	<b>£203.97</b>	<b>£45.80</b>
Usage hours per day	<b>8</b>	<b>8</b>	<b>18</b>	<b>18</b>	<b>10</b>	<b>8</b>	<b>8</b>



**Proteomics (WP)****Manager:** Dr Andrew Bottrill**Userbase:** Chemistry, Engineering, SLS, WMS

Proteomics provides access to high specification mass spectrometers for identification and quantification of proteins. This should not be confused with the MS or FTICR facilities in Chemistry. Where appropriate, include a small percentage (5% unless proteomics intensive) of Dr Andrew Bottrill or Dr Cleidi Zampronio's time to support training, understanding sample preparation, and data analysis support. This should be included as DA and will not include any overheads. Note, the full cost of access will be charged to the department, with of some to all of cost dependant on funder. The difference between the full cost of the work (calculate at efficient use) and the recoverable charge will be the responsibility of the department.

	Orbitrap Fusion	Quantiva	Ion Mobility (timsTOF Pro)
Staffing costs	£207.61	£50.75	£279.82
Equipment running costs	£173.22	£54.86	£159.30
Depreciation (replacement cost basis)	£243.48	£99.05	£260.87
Central Support Charges-Space	£92.02	£97.37	£92.02
Central Support Charges- Staff based	£15.69	£3.78	£20.95
<b>Daily cost: accounting basis</b>	<b>£732.01</b>	<b>£305.81</b>	<b>£812.97</b>
Add: indirect and estates	£249.31	£60.05	£332.99
Less: space and staff csc	(107.70)	(101.15)	(112.97)
<b>Daily cost: fEC basis</b>	<b>£873.61</b>	<b>£264.70</b>	<b>£1,032.99</b>

<b>Industry rates (machine only)</b>	<b>£ 873.61</b>	<b>£ 305.81</b>	<b>£ 1,032.99</b>
<b>Daily cost : UKRI</b>	<b>£ 380.83</b>	<b>£ 105.61</b>	<b>£ 439.12</b>
<b>Usage hours per day</b>	<b>8</b>	<b>8</b>	<b>8</b>

### **Scientific Computing (SC)**

**Director:** Prof David Quigley

**Manager:** Dr Miguel Afonso Oliveira

**Userbase:** Chemistry, Physics, Engineering, Computer Science, Maths, Statistics, WBS, WMG, SLS

#### **Rates for architecture:**

For latest information see <https://warwick.ac.uk/research/rtp/sc/costs/>

#### **RSEs:**

There is a team of 3 RSEs in the SC RTP. Please note that these are on professional service terms and so do not incur overheads. Timesheets for these staff are kept in Vidatum. Also note that WMG has a team/a few RSEs within the department and so it is prudent to ensure that these are not the staff being requested by WMG PIs.

**Note:** The new Technical Director of Research Computing post works closely alongside ARC/research community and IDG to ensure that the computing infrastructure we have meets the needs of researchers. This includes some oversight of the SC RTP, Bioinformatics and other areas. However, there may be instances where PIs believe they need infrastructure that is currently not available, in which case, this should be flagged to the Technical Director of Research Computing, who will work with the PI to see if the work can be accommodated with existing resources and if not, how it could be facilitated in a manner that is future proofed for developments such as network changes.

**Spectroscopy (Spec)****Director:** Dr Ben Green**Manager:** Dr Ben Breeze**Userbase:** Chemistry, Physics, Engineering, WMG, SLS

Spectroscopy has a range of equipment, including Raman spectrometers, UV-Vis, FTIR microscope and electron paramagnetic resonance (EPR) instruments. The RTP has multiple of many of the instruments, for example Raman with different laser wavelengths, but the costs below are based on the average cost across a particular technique type. For this RTP, departments buy a 'share' of access, and any recovery of instrument access (typically DA) on grants reduces this cost. It may be appropriate in some circumstances to include additional RTP Manager time to account for experimental design, system development and data analysis.

	<b>Raman</b> (Renishaw and Horiba systems)	<b>UV-Vis</b> (Perkin Elmer)	<b>EPR</b> (Bruker CW and Pulse systems)	<b>FTIR microscope</b> (Thermo In10 and Is50R)	<b>Fluorescence</b>	<b>Fluorometer</b>	<b>Optical Profiler</b>
Staffing costs	£39.82	£24.88	£29.55	£41.80	£14.43	£24.88	£14.43
Equipment running costs	£26.99	£5.34	£16.48	£11.93	£3.98	£2.84	£2.84
Depreciation (replacement cost basis)	£93.75	£23.18	£97.05	£44.55	£27.27	£28.18	£28.64
Central Support Charges-Space	£23.24	£23.24	£23.24	£23.24	£23.24	£23.24	£23.24
Central Support Charges- Staff based	£3.14	£2.03	£2.45	£3.40	£1.26	£2.16	£1.39
<b>Hourly cost: accounting basis</b>	<b>£186.94</b>	<b>£78.66</b>	<b>£168.76</b>	<b>£124.91</b>	<b>£70.18</b>	<b>£81.29</b>	<b>£70.53</b>
Add: indirect and estates	£51.50	£33.82	£39.16	£53.62	£21.56	£33.82	£21.56

Less: space and staff csc	-£26.38	-£25.26	-£25.69	-£26.64	(24.49)	-£25.39	(24.62)
<b>Daily cost: fEC basis</b>	<b>£212.06</b>	<b>£78.66</b>	<b>£182.24</b>	<b>£151.89</b>	<b>£67.25</b>	<b>£89.72</b>	<b>£67.48</b>
<b>Industry rates (machine only)</b>	<b>£212.06</b>	<b>£78.66</b>	<b>£182.24</b>	<b>£151.89</b>	<b>£70.18</b>	<b>£89.72</b>	<b>£70.53</b>
<b>Daily cost : UKRI</b>	<b>£66.81</b>	<b>£30.22</b>	<b>£46.03</b>	<b>£53.73</b>	<b>£18.41</b>	<b>£27.72</b>	<b>£17.27</b>
<b>Usage hours per day</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>

**Warwick Centre for Ultrafast Spectroscopy (WCUS)****Director:** Dr James Lloyd-Hughes**Manager:** Dr Jack Woolley**Userbase:** Chemistry, Physics, Engineering

WCUS is predominantly centred around an ultrafast laser originally purchased on an EPSRC grant, with subsequent upgrades. Bookings on this main system are typically on the day to week timescales. This system can handle multiple experiments running in parallel. For access charges on UKRI grant applications, please include the UKRI rate detailed in the table below. Note the users Departments will be charged for access at FEC, then any charges included as DA costs will be used to reduce the cost to the Department. It may be appropriate in some circumstances to include additional RTP Manager time to account for experimental design, system development and data analysis.

	Ultrafast system (main system, EPSRC funded 2016)	Fluorolog	FTIR	Carbide
Name of funder	EPSRC	University and EPSRC Upgrade 2021	University	University
Staffing costs	£99.79	£45.29	£29.42	£94.31
Equipment running costs	£101.67	£17.50	£17.50	£5.00
Depreciation (replacement cost basis)	£120.83	£152.50	£50.00	£52.50
Central Support Charges-Space	£64.42	£21.47	£24.14	£45.21
Central Support Charges- Staff based	£8.26	£3.75	£2.44	£7.81
<b>Daily cost: accounting basis</b>	<b>£394.97</b>	<b>£240.51</b>	<b>£123.50</b>	<b>£204.82</b>
Add: indirect and estates	£124.28	£57.95	£37.21	£116.02

Less: space and staff csc	(72.68)	(25.22)	(26.58)	(53.02)
<b>Daily cost: fEC basis</b>	<b>£446.57</b>	<b>£273.24</b>	<b>£134.13</b>	<b>£267.83</b>
<b>Industry rates (machine only)</b>	<b>£446.57</b>	<b>£273.24</b>	<b>£134.13</b>	<b>£267.83</b>
<b>Daily cost : UKRI</b>	<b>£ 201.46*</b>	<b>£ 62.79</b>	<b>£ 46.92</b>	<b>£99.31</b>
<b>Usage hours per day</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>

\*Note, this is based on efficient use of the main system for 3 simultaneous experiments, so 200 days per year x 3.

**Photoemission (XPS)****Manager:** Dr Marc Walker**Userbase:** Chemistry, Physics, Engineering, WMG

The XPS RTP has two instruments – a high throughput machine and a surface science focused instrument. However, as general measurements carried out across these are similar, we have included an averaged cost of the resource. Note the users Departments will be charged for access at an set rate, then any charges included as DA costs will be used to reduce the cost to the Department. Additional RTP Manager time may be appropriate to include in particularly complex measurements or where extensive data analysis support is required.

	<b>XPS/UPS (Kratos and Omicron)</b>
Staffing costs	£209.20
Equipment running costs	£98.21
Depreciation (replacement cost basis)	£285.84
Central Support Charges-Space	£83.06
Central Support Charges- Staff based	£15.10
<b>Daily cost: accounting basis</b>	<b>£691.55</b>
Add: indirect and estates	£242.29
Less: space and staff csc	(98.31)
<b>Daily cost: FEC basis</b>	<b>£ 835.53</b>
<b>Industry rates (machine only)</b>	<b>£ 835.53</b>
<b>Daily cost : UKRI</b>	<b>£307.41</b>
<b>Usage hours per day</b>	<b>7.5</b>



**X-ray Diffraction (XRD)****Director:** Prof Richard Walton**Manager:** Dr David Walker**Userbase:** Chemistry, Physics, Engineering, WMG

The XRD RTP contains a range of equipment utilising X-ray sources, beyond just XRD. This includes powder, single crystal and high resolution XRD, a small angle x-ray scattering system (SAXS), X-ray Fluorescence spectroscopy (XRF) and an X-ray absorption fine structure (XAFS) capability. For some of the capabilities, multiple systems with different specialisms or capacity are available, but for simplicity a single ‘technique’ is included below – ie there are 6 different powder diffractometers but only one cost.

Access rates for grants and industry projects are provided below, for inclusion as DA costs (typically). Instrument access is charged to departments and then the allocated costs on grants reduce this cost. It may be appropriate on some techniques (ie SAXS) to include RTP staff time for complex experiment design, coding, and/or data analysis.

	Powder XR D	High Resolution	Single Crystal	SAXS	XRF	XAFS	ED
Staffing costs	£69.09	£69.09	£82.16	£231.57	£62.06	£47.32	£304.31
Equipment running costs	£25.25	£19.89	£62.00	£36.45	£40.75	£14.15	£30.90
Depreciation (replacement cost basis)	£157.89	£167.46	£229.67	£287.08	£143.54	£155.02	£710.04
Central Support Charges-Space	£30.22	£37.98	£34.50	£74.32	£34.51	£41.37	£44.91
Central Support Charges- Staff based	£5.69	£5.69	£6.94	£20.67	£4.86	£3.61	£28.17
<b>Daily cost: accounting basis</b>	£288.14	£300.12	£415.26	£650.10	£285.72	£261.47	£1,118.32
Add: indirect and estates	£88.22	£88.22	£108.07	£326.38	£74.99	£55.15	£445.46
Less: space and staff csc	<b>-£25.90</b>	<b>-£43.67</b>	<b>-£41.44</b>	<b>-£95.00</b>	<b>-£39.37</b>	<b>-£44.98</b>	<b>-£73.07</b>
<b>Daily cost: fEC basis</b>	£340.46	£344.67	£481.89	£881.48	£321.35	£271.63	£1,490.71
<b>Industry rates (machine only)</b>	<b>£340.46</b>	<b>£344.67</b>	<b>£481.89</b>	<b>£881.48</b>	<b>£321.35</b>	<b>£271.63</b>	<b>£1,490.71</b>

<b>Daily cost : UKRI</b>	<b>£94.34</b>	<b>£88.98</b>	<b>£144.16</b>	<b>£268.02</b>	<b>£102.81</b>	<b>£61.47</b>	<b>£335.21</b>
<b>Usage hours per day</b>	<b>12</b>	<b>24</b>	<b>12</b>	<b>8</b>	<b>8</b>	<b>12</b>	<b>8</b>