



**Senate**

<b>Paper Title</b>	School structures in the Faculty of Science and Engineering
<b>Outcome requested</b>	Senate is asked to <b>consider</b> and <b>approve</b> the attached paper.
<b>Points for Senate members to note and further information</b>	<p>In the summer of 2020, SET approved in principle a proposal to merge the Department of Chemistry (currently within the School of Biological and Chemical Sciences (SBCS)) and the School of Physics and Astronomy (SPA) to create a new school within S&amp;E.</p> <p>The new school, to be named the School of Physical and Chemical Sciences, will provide a platform in order to grow Chemistry and Physics, enabling these disciplines to realise their full potential through ambitious future development plans. It will enable greater cross-disciplinary working enhancing both student recruitment and research activity; it will also allow us to maximise efficiencies and balance the Faculty structure to result in Schools of more similar size.</p> <p>This paper outlines the current position and rationale for change alongside a proposed timeline for the new school to come into existence by August 2021. A formal launch of the new school would take place for external purposes in 2022, allowing time for more detailed transition plans to take effect. The School of Biological and Chemical Sciences (SBCS) would become the School of Biological and Behavioural Sciences (SBBS) and the School of Physics and Astronomy (SPA) would be disestablished.</p> <p>A consultative group with representatives from both areas was established in autumn 2020. The realignment of SPA and Chemistry is not subject to formal collective consultation as it will not result in significant changes to terms and conditions of employment for our staff. However, in line with the Queen Mary Values, the Faculty were keen to adequately engage with colleagues in SPA and SBCS to actively involve them in the decisions and process for creating the new School.</p> <p>This paper has been authored by representatives from the consultation group and has the full support of that group, the S&amp;E Faculty Executive and SET.</p>
<b>Questions for Senate to consider</b>	<p>Senate is invited to consider and approve the following proposals:</p> <ul style="list-style-type: none"><li>a) To create a new School of Physical and Chemical Sciences (SPCS);</li><li>b) To affect the corresponding changes to the shape and name of SBCS, to become the School of Biological and Behavioural Sciences (SBBS);</li><li>c) To disestablish SPA.</li></ul>

<b>Regulatory/statutory reference points</b>	These proposals would not result in any significant changes to terms and conditions of employment for our staff. As such, no formal consultation process is required within the law or our internal policies.
<b>Strategy and risk</b>	The proposal aligns with Queen Mary's Strategy 2030 in strengthening the disciplines of Chemistry and Physics and providing an improved platform for them to grow and flourish. Staff support of, and involvement in, the merger will be key to its success. Significant work has already taken place with a consultation group and staff will be involved in the transition process.
<b>Reporting/consideration route for the paper</b>	If approved by Senate, this paper would be presented to Council in July 2021.
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<b>Sponsor</b>	Professor Wen Wang, Vice Principal for Science and Engineering

## School structures in the Faculty of Science and Engineering

### 1. Introduction and Background

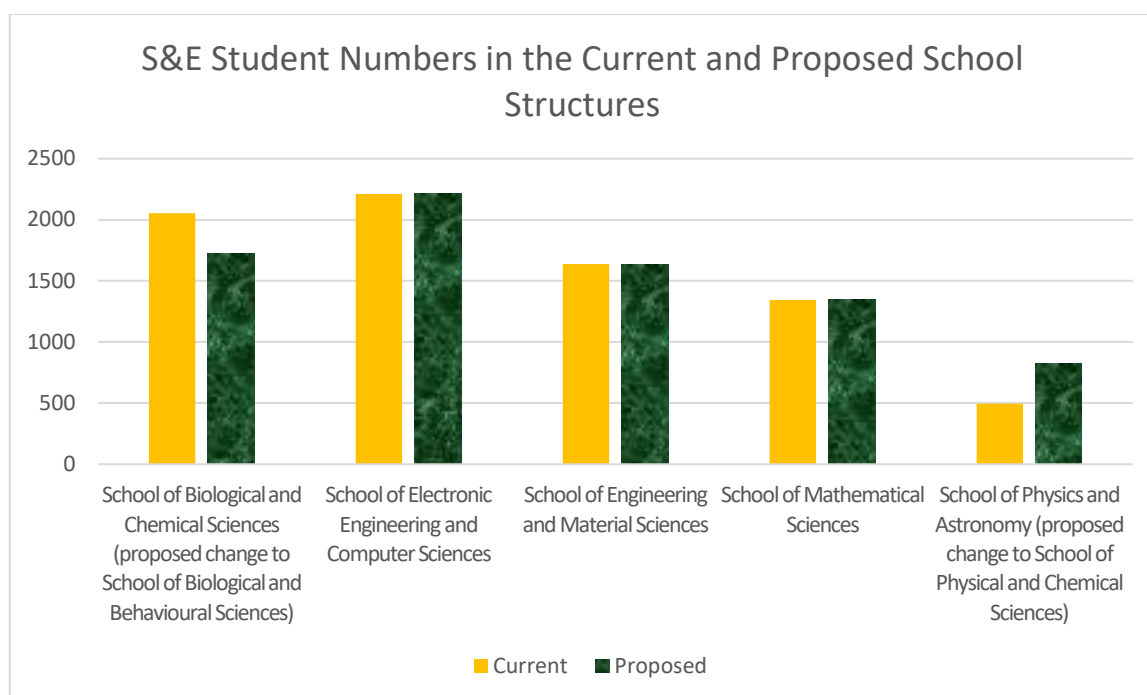
- 1.1 The Faculty of Science and Engineering proposes to create a new School of Physical and Chemical Sciences and recognises that a comprehensive multidisciplinary university that aspires to be a leader on the international stage needs to support research and teaching in the core disciplines, including Physics and Chemistry. The intention is to merge the School of Physics and Astronomy with the Department of Chemistry, building on the recognised existing strengths of Chemistry, Physics and Astronomy at Queen Mary- as evidenced by their success in the last REF period- and realise their full potential through ambitious future development plans. This will allow Queen Mary to compete more effectively both nationally and internationally.
- 1.2 While such a realignment will allow us to maximise efficiencies, it is not intended as a cost-cutting measure, and there will not be any redundancies as a consequence of this. As such, no formal consultation process is required within the law or our internal policies.
- 1.3 An initial proposal to merge the School of Physics and Astronomy (SPA) with the Department of Chemistry, currently part of the School of Biological and Chemical Sciences (SBCS), was brought to Senior Executive Team (SET) in the summer of 2020. The initial proposal was that this merger would create a new School of Natural Sciences.
- 1.4 The primary objectives for this proposal were (and are):
- To balance the Faculty structure to result in Schools of more similar size
  - To provide a platform in order to grow Chemistry and Physics.
- 1.5 After the initial approval from SET to explore this further, the proposal was shared with colleagues in SBCS and SPA. Following consultative discussions with the academics of SPA and the Department of Chemistry, we have now made amendments to the proposal and have the support of our consultation group to proceed.
- 1.6 This paper outlines the current position and rationale for change and a revision of the name of the proposed new school to the School of Physical and Chemical Sciences and for SBCS to become the School of Biological and Behavioural Sciences (SBBS). The timeline and process with which the Faculty wish to move forward are presented, as is the development of the management and operational structures needed for the School of Physical and Chemical Sciences as an interdepartmental School.

### 2. Rationale for change

- 2.1 We need to facilitate the Faculty to become greater than the sum of its parts, better integrating its strengths to compete more effectively both nationally and internationally.
- 2.2 The size of Schools across the Faculty is currently inconsistent, particularly regarding student numbers (see Figure 1). The formation of the new School of Physical and Chemical Sciences will help to readdress this and should enable greater cross-disciplinary working enhancing both student recruitment and research activity. The name initially for the school – School of Natural Sciences- was felt not to fully represent the identities of the two units involved. The working group, in agreement with the staff of Chemistry and SPA, has proposed that their preferred name would be the School of Physical and Chemical Sciences.

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- 2.3 The School of Physical and Chemical Sciences will be a catalyst for greater interdisciplinary offerings and teaching collaboration within the Faculty. This will provide the opportunity to improve post-graduate taught provision and lessen the financial instability caused by fluctuations in UG subject choices. Moreover, by strengthening interactions across the core disciplines of Chemistry and Physics, the Faculty plans to achieve a better balance in the portfolio of the research funding in the new School, in particular via interdisciplinary research addressing societal needs aligned with the UKRI research priorities. This in turn will also increase opportunities to promote impact-driven research via the identification of new industrial collaborative links.
- 2.4 The School of Biological and Chemical Sciences will become the School of Biological and Behavioural Sciences, a step which will allow it to concentrate on developing its world-leading research and education in the biological sciences (biology, biochemistry and biomedical sciences) and in behavioural psychology. This change of name was discussed and supported by colleagues within the School.



**Figure 1** S&E student numbers in the current and proposed school structures<sup>1</sup>

### 3. Educational Offering of the new School

- 3.1 An institutional strength of Queen Mary is the interdisciplinary research that exist within physical sciences especially between Chemistry and Physics which has led to long term links between academics. The creation of the new School of Physical and Chemical Sciences will strengthen such research collaborations further, whilst at the same time allowing us to foster new links with respect to our educational provision. Specifically, it will promote the sharing of best practice and a more coherent framework, thus improving the student experience. Furthermore, collaboration across disciplines (as well as across the Faculty and University) will foster innovations in teaching and learning ensuring a world-class education for our students.

<sup>1</sup> 20/21 student numbers based on December 2020 HESA data, including London-based UG, PGT and PGR students

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In the long term, there will be potential to seek and explore opportunities with respect to the development of new UG taught programmes. We will look to modernise our provision for 21<sup>st</sup> Century students studying Physics, Astronomy and Chemistry, drawing on more computational approaches, data science, machine learning and AI, to better meet student needs and expectations and ensure our graduates are equipped to address “big data” questions. Nanoscience/technology and materials science are further areas of strength in both departments and it is envisaged we may draw on these to develop contemporary programmes that are attractive to potential UG students. There may be an opportunity to develop a TNE (transnational education) following the success of similar programs in SBCS and SEMS, as well as potentially Degree Apprenticeship programmes to increase student numbers and to strengthen industrial links and partnerships. The scope of the projects we can offer at PG level (MSci/MSc/MRes) will be wider reaching and interdisciplinary improving the outcomes of our postgraduate students. These innovations will be in addition to the introduction of new online programmes of study that have been identified as a means of reaping a dividend from our experience of online teaching during the pandemic (e.g. an online MSc in Astronomy aimed at international students). The new initiatives we plan to implement will ensure the new School is in the right position to grow and develop with respect to its educational provision.

- 3.2 In line with the 2030 strategy to become the most inclusive and diverse Russell Group University, the merger offers the potential for academic and technical staff across both disciplines to work together to develop new innovative postgraduate taught programmes, which in turn will attract high calibre students from across the world. Drawing on the research strengths of both Chemistry and Physics/Astronomy programmes related to interdisciplinary scientific computing and industrial engagement will be explored, as well as materials physics/chemistry and nanotechnology.
- 3.3 Many institutions that combine the disciplines of Chemistry, Physics and Astronomy within the same School offer a range of teaching programmes focusing on core subjects as well as interdisciplinary programmes, and there is a recognised market for this.
- 3.4 In addition to the development of new PGT programmes there may be the opportunity to optimise module teaching where overlaps exist (Foundation and year one), but within the constraints of the Royal Society of Chemistry (RSC) and Institute of Physics (IOP) accreditations (the RSC and IOP are the professional bodies responsible for the accreditation of Chemistry and Physics programmes in the UK, respectively). This should reduce the workload on academic staff as well as providing the opportunity for students to experience a broader understanding of their subjects in different contexts (in particular in the Foundation year). The delivery of graduate attributes, professional skills, mental health resilience and employability is a further area of opportunity where teaching could be co-delivered to both cohorts allowing students to interact and engage with peers outside of their immediate discipline.
- 3.5 The Faculty would retain existing links between Chemists and the Biological Sciences within what is currently SBCS, enhancing cross-school educational collaboration. In particular, colleagues within Chemistry will continue to contribute to the delivery of the Biochemistry Program (both core and elective modules) and the biochemistry colleagues currently delivering on the Chemistry UG degree would also continue to do so.

### 4. Research Offering of the new School

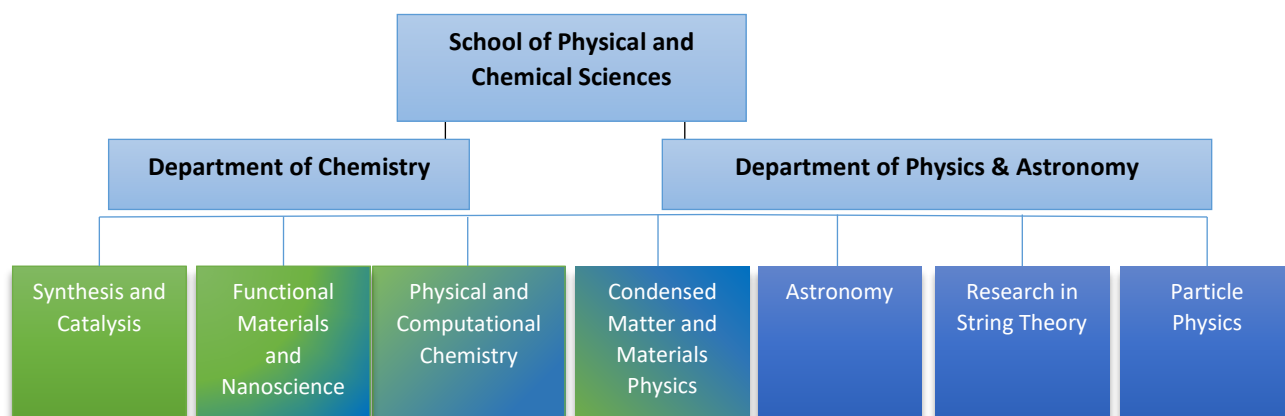
- 4.1 The new School would comprise several research groups with varying funding sources. There is direct cross-over between some of the existing research groups/themes (see Figure 2), particularly “Condensed Matter and Materials Physics” in SPA with both “Physical and Computational Chemistry” and “Functional Materials and Nanoscience” in Chemistry. A closer interaction between these, and

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the other, research groups within the framework of the new School, can provide greater opportunities for:

- i) a better balance in the portfolio of the research funding within the UKRI remit, and more rapid responses and earlier planning/strategic alignment to bid for external research funds that require interdisciplinary teams, e.g. large EPSRC funding bids;
- ii) increase in the number of joint and interdisciplinary PhD students towards the creation of doctoral training centres;
- iii) a better and more efficient use of key research equipment and facilities;
- iv) the generation of impact also through greater visibility for industrial collaborations.

These objectives are in line with the [Queen Mary 2030 strategy](#) and both units (SPA and Chemistry) future strategies to expand interdisciplinary research, as outlined in the respective REF2021 statements (UoA 9 and UoA 8).



**Figure 2** Research superstructure of the School of Physical and Chemical Sciences

4.2 Since 2014, both units (SPA and Chemistry) have succeeded in increasing: grant income (SPA: by 20%; Chemistry by 25%); PhD completion numbers (SPA: doubled; Chemistry: tripled); and income “in-kind” from research council facilities (SPA: 25 fold; Chemistry 2-fold). A merger of the two units will allow an even greater development, with a view of increasing interdisciplinary research aligned with the UKRI research priorities.

4.3 Notably, among the different collaborations already in place between SPA and Chemistry, the spin-out company *Chromosol* Ltd (Prof Gillin with Dr Wyatt) represents a recent successful example: valued at £1.6M, it won the prestigious Royal Society of Chemistry Emerging Technologies competition in 2020 and hired two recent Physics and Chemistry PhD graduates, Dr Ye and Dr Parr. The new School of Physical and Chemical Sciences will foster these kind of collaborations towards even greater successes, while continuing to encourage existing collaborations with Biology

## 5. Staff engagement

5.1 The realignment of SPA and Chemistry is not subject to formal collective consultation as it will not result in any redundancies or significant changes to terms and conditions of employment for our staff. However, the Faculty were keen to adequately engage with colleagues in SPA and SBCS to work through their concerns and actively involve them in the decisions and process for creating the new School. This is of paramount importance for the success of the project and in line with the Queen Mary Values.

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- 5.2 A consultation working group was established in the autumn of 2020 to identify the critical issues to address. This was done through the engagement of representative colleagues from Chemistry and SPA who were asked to act as conduits with their academic colleagues in order to represent and relay views and concerns. Furthermore, representatives from both disciplines will continue to advise on how to implement the merger taking into account the practical aspects related to teaching and research that are key for the efficient operation of the new School.
- 5.3 Alongside the consultation working group, a sub-group is reviewing the current professional and technical services structures in SPA and SBCS and the future needs for SPCS and SBBS. The group includes the S&E FOO, S&E Technical Resources Manager, S&E Strategic HR Partners and the School Managers from SPA and SBCS. It is envisaged that the new structure will provide a clear career development pathway for professional services and technical colleagues.
- 5.4 The consultation working group debated a number of points of concern, from teaching implications to the inherent operational differences and requirements. The group worked well to enable constructive dialogue and to reassure colleagues of the purpose and positive implications of the new school. This resulted in positive engagement of the members of staff of the two units, a necessary condition for the success of the merger.
- 5.5 The Faculty has been keen to listen and respond to any concerns which were raised through the consultation working group and other groups, such as the S&E Faculty Executive. One such concern was about the proposed name for the school – School of Natural Sciences- that was felt not to fully represent the identities of the two units involved. The working group, in agreement with the staff of Chemistry and SPA, has proposed that their preferred name would be the School of Physical and Chemical Sciences.
- 5.6 A further sustained concern was about the timescales initially proposed (for the new School to take effect from August 2021) and practicalities of managing this merger alongside the additional pressures which everyone has been facing due to Covid-19 and related lockdowns. Many felt that there was insufficient time to manage this transition effectively (and successfully) and engage staff sufficiently in order to commence the new school in August 2021. It was felt important to launch the new school with adequate planning and at the start of an academic year, both for internal management reasons, such as overseeing the budget effectively, and external reasons such as communicating clearly with existing and potential students and to ensure our marketing materials are accurate. For these reasons, the group requested that the timescales be amended to work towards launching the new School in August 2022.
- 5.7 When the consultation working group met in early 2021, all in the group confirmed they were content to move forward with the formation of the new School based on an amended timescale and name. There remained a number of areas for discussion regarding the practical details of how the School would operate, and the work required to ensure the merger happened without disruptions, with the necessary thought and consideration. In order to accomplish this, the consultation working group deems necessary the involvement of the staff of both Chemistry and SPA, in particular through their representatives, via working groups that will outline the best strategies to resolve matters such as:
- i) the overall organisation of the new School's governance and executive team.
  - ii) the rationalisation of the Chemistry and SPA budgets considering the inherent operational differences and requirements of the two units

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- iii) the approaches to teaching ensuring that best practice and discipline-specific identities are retained, while optimising crosslinks, e.g. contributions of both units to foundation and maths support to UG
- iv) the logistic and financial implications of unravelling Chemistry from SBCS, e.g. the teaching support of Chemists to SBCS (Biochemistry and Foundation) and co-delivery of teaching between SBCS and SMD;
- v) the organisation of professional and technical support staff (e.g. retaining Joseph Priestley-based support staff considered essential to Chemistry);
- vi) the research space allocation (in particular in the Joseph Priestley building areas shared with SBCS);
- vii) the branding of the School and Departments so it is most effective and attractive for their external markets in both teaching and research.

It was also felt that staff need to be involved in detailed discussions as to how the new school would be formed and operate. It is the Faculty's view that involving staff in these matters, and taking the time to get them right, is key to making this project a success and working collegiately with colleagues to do so. This approach is also firmly in line with the Queen Mary Values.

### 6. Refined proposal, timescales and next steps

- 6.1 Having carefully considered the feedback received through our staff involvement, the Faculty will now seek the approval of Senate and Council to move forward with the proposed merger of the School of Physics and Astronomy with the Department of Chemistry.
- 6.2 Following staff engagement and discussion, the Faculty proposes that the new School would be named 'The School of Physical and Chemical Sciences' and would come in existence by August 2021; we plan to formally launch it in August 2022. The School of Biological and Chemical Sciences (SBCS) would become the School of Biological and Behavioural Sciences (SBBS) and the School of Physics and Astronomy (SPA) would be disestablished.
- 6.3 Discussions and plans will continue in the coming months and academic year to ensure that the appropriate plans and arrangements are put in place to facilitate a successful merger (see also 5.7), which benefits the disciplines involved, the Faculty and Queen Mary as a whole.
- 6.4 The Faculty believes that the proposal represents an exciting opportunity to build on the existing strengths of the disciplines of Chemistry, Physics and Astronomy, through a synergistic combination of skills, expertise and best practice, whilst maintaining their specific identities. The proposed extended time scale will ensure sufficient time for technical aspects of the merger to be resolved satisfactorily, in particular in relation to the multidepartment nature of the new School. The anticipated benefits of the merger in terms of research and teaching provide strong motivation for the proposal and with it the support of staff, vital to ensure its success. This will pave the way for a stronger future of the aforementioned disciplines at Queen Mary.