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**THE FARADAY  
INSTITUTION**

**Please note that you must read the full Call document for guidance  
before submitting your proposal**

## **ISCF Faraday Battery Challenge: Faraday Institution: Battery Characterisation Call**

**Call type: Invitation for proposals**

**Closing date: 16:00 on 4<sup>th</sup> April 2019**

**Funding Available:** £2 Million for up to four awards

**How to apply:** Dual Stage: Intent to Submit and Full Proposals

**Assessment Process:** Proposals will be assessed by an expert interview panel, resulting in a rank ordered list.

### **Key Dates:**

<b>Activity</b>	<b>Date</b>
Deadline for Intent to Submit	14 March 2019 at 16:00
Deadline for Full Proposals	4th April 2019 at 16:00
Interview Panel	W/C 29 April 2019
Funding decision	W/C 6 May 2019
Indicative Grant start date	1 July 2019

**Additional information:** Grants will be funded by Faraday Institution as part of the Industrial Strategy Challenge Fund – Faraday Battery Challenge. The duration of the projects must be 21 months.

### **Contacts:**

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# **ISCF Faraday Battery Challenge: Faraday Institution: Battery Characterisation Call**

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**Related themes: Energy, Engineering, ICT, Manufacturing the future,  
Mathematical sciences, Physical sciences**

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## Summary

The **Faraday Institution** (<https://faraday.ac.uk/>) was established in 2017 as part of the Industrial Strategy Challenge Fund – Faraday Battery Challenge (<https://www.ukri.org/innovation/industrial-strategy-challenge-fund/faraday-battery-challenge/>).

The Faraday Institution is the UK's independent institute for electrochemical energy storage science and technology, supporting research, training, and analysis. Bringing together scientists and industry partners on research projects to reduce battery cost, weight, and volume; to improve performance and reliability; and to develop whole-life strategies from mining to recycling to second use. It is envisaged that outputs from this research will have a significant influence on technology for electrical vehicles as well as having cross sector benefits for the energy sector and consumer goods.

This call invites proposals from researchers interested in research projects to develop battery related characterisation analytical techniques and capabilities.

This call is expected to lead to new characterisation and analytical techniques which will have the effect of strengthening the UK's leading position in electrochemical energy storage technology, providing our battery researchers with world leading methods and capabilities to advance their research. **In short, we are looking for a revolution in battery research and a “business as usual” approach will not be deemed sufficient.**

UK industry requires improvements in energy density, power density, cost, safety, lifetime, predictability and recycling of batteries to realise the improvements necessary to mainstream new battery based technologies. Proposals must clearly identify how new characterisation techniques and capabilities would support this objective.

Projects need to have a 21 month duration. An amount of £2 million is available for up to four awards

Applicants intending to submit a proposal must indicate a desire to do so no later than **16:00 on Thursday 14<sup>th</sup> March 2019** via the SmartSurvey link on the call page. Proposals are required to be submitted by **16.00 on 4th April 2019** using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

The proposals will be invited and assessed by an independent expert panel. A final recommendation for funding will be made by the CEO, Faraday Institution to the Board of Trustees.

The Faraday Institution may mandate a specific spend profile across the duration of the funded project and prior to awarding the grants. All funded projects must be prepared to undertake spend by 1 July 2019 at the latest.

Applicants will also be expected to work within the governance framework, which oversees the Faraday Institution, throughout the lifetime of the project which will include regular reporting, monitoring and project reviews. The Faraday Institution may re-direct resources as appropriate over the lifetime of the project, which may include terminating projects prior to their completion or re-deployment of resources to more promising projects within the Faraday

Institution portfolio. Applicants should note that additional grant conditions will therefore be applied to successful proposals.

## Background

This call for research projects in line with the ISCF Faraday Challenge forms part of the Government's Industrial Strategy Challenge Fund and was announced on 21 April 2017 (<https://epsrc.ukri.org/newsevents/news/faradayinstitution/>).

This call is one component of a wider programme to enable the UK to strengthen its economy through the establishment and growth of its world-leading capabilities in novel batteries technology. Information about the Faraday Institution Grant information is available here: <https://faraday.ac.uk/research-projects/>

The Faraday Institution has developed the scope for the call after completing a study of materials characterisation facilities available in the UK (Identifying Infrastructure and Collaborative Expertise for Electrochemical Energy Storage Application – Nigel D Browning & Laurence J Hardwick) and by engaging the academic and analytical community. The output from this work was then refined by the HQ team, Expert Panel and signed off by the Board of Trustees.

Further details of the topic are laid out below. It is important to note that this research is designed to provide the UK with world-leading characterisation and analytical capability to support breakthrough advances by researchers in electro-chemical energy storage technology.

### **Battery Related Characterisation and Analytical Technique Development**

- Characterisation science development that accelerates fundamental electrochemical energy storage chemistry understanding.
- Research targeted at advanced technique development at/across small, medium and/or large scale user facilities to support structural and mechanism characterisation of a wide range of battery chemistry systems.
- Research topics may include but not be limited to new single or combined techniques, multimodal approaches, opportunities to leverage modelling and machine learning methodologies.

For more information about EPSRC's portfolio and strategies, see our website: <https://epsrc.ukri.org/research/ourportfolio/>

## Funding available

The funding provided to these research projects will be defined based on the scope and requirements of the proposed projects in collaboration with the Faraday Institution.

In preparing the full proposals, the successful applicants will be required to work with the Faraday Institution team to refine their project, the work packages and project plan, including a year 1 plan. Universities and applicants should note that successful proposals through this call will be bound to certain expectations specific to this call such as:

- Facilitate the work of the Institution by allowing participating staff the freedom to work solely on the work of the institution i.e. allow participating staff on occasion to work at the headquarters of the institution and to free up staff time to focus on specific Institution projects, where relevant.
- Accept that as per the terms and conditions of this call that the Institution has the rights to re-deploy staff and funding to other projects upon advice from relevant governance structures.
- Provide access to facilities to other Institutions if funded by the Faraday Institution.
- Work with others in the innovation chain, specifically across innovation and scale up activities.
- Be prepared to work with the Faraday Institution HQ and to be directed by the overarching governance structure on the research challenges to be focused on.
- All applying institutions must acknowledge acceptance of being bound by the terms and conditions of the Faraday Institution within their application.
- Conditions specifically relating to the management of the outputs from these research projects such as intellectual property etc. Applicants will be expected to agree to such terms and conditions as part of the funding process.

## Equality, Diversity and Inclusion

The long term strength of the UK research base depends on harnessing all the available talent and the Research Councils have together developed the ambitious UK Research and Innovation Equality, Diversity and Inclusion Action Plan <https://www.ukri.org/files/legacy/skills/action-plan-edi-2016/>

In line with the UK Research and Innovation Diversity Principles, EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice. We are committed to supporting the research community in the diverse ways a research career can be built with our investments. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcomes applications from academics who job share, have a part-time contract, need flexible working arrangements or those currently committed to other longer, large existing grants. Please see our Equality and Diversity webpages <https://epsrc.ukri.org/funding/equalitydiversity/> for further information.

## Equipment

Where possible, researchers are asked to make use of existing facilities and equipment, including those hosted at other institutions. Should equipment in addition to that already available within their own organisation or within other FI funded projects be required individual items of equipment over £10,000 in value

can be included on research proposals submitted through this call, but research organisations will be expected to make a contribution to the cost.

Faraday Institution has allocated a restricted capital budget to this call which will be used to support equipment requests over £10K. The capital budget will be allocated to successful full proposals based on the advice of peer review and discussions with the applicants and partners.

Requests for equipment over threshold for EPSRC Strategic Equipment will **not** need to go through the separate Strategic Equipment Process but will be considered as part of the assessment of proposals. Please note: This call is not for the creation of a national equipment facility or service.

For more information on equipment funding, please see:  
<https://www.epsrc.ac.uk/research/facilities/equipment/>.

## Eligibility

Please ensure sufficient time to create Je-S accounts for Investigators who do not currently have one.

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:  
<https://epsrc.ukri.org/funding/applicationprocess/fundingguide/>

A list of eligible organisations to apply to EPSRC is provided at:  
<https://www.ukri.org/funding/how-to-apply/eligibility/>

## How to apply

### Submitting an application

You should prepare and submit your proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

When adding a new proposal, you should select:

- Council 'EPSRC'
- Document type 'Standard Proposal'
- Scheme 'Standard'
- On the Project Details page you should select the 'Faraday Institution: Battery Characterisation Call' call.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your application by 16:00 on 4<sup>th</sup> April 2019.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website

(<https://epsrc.ukri.org/funding/applicationprocess/>) which should be consulted when preparing all proposals.

## Guidance on writing an application

In addition to the proposal details that you need to complete in Je-S (including outline costs and a non-technical summary of the proposal), you will also need to prepare the following attachments:

- **Case for Support**, totalling up to eight A4 sides, comprising up to two A4 sides for a track record, and six A4 sides describing proposed research and its context. This must be attached, as a single document, using the 'Case for Support' attachment type in Je-S.
- **Pathways to impact document** - up to two A4 sides
- **Workplan** - maximum one A4 side
- **Justification of Resources** - up to two A4 sides
- **CVs**, up to two A4 sides each, for named research staff (including Researcher Co-Investigators), or visiting researchers. CVs are not required for Principal or Co-Investigators on standard proposals.
- **Project partner letters of support** - where applicable, for all named project partners and no page limit
- **Letters of Support** - in exceptional circumstances a maximum of **three** letters with no page limit
- **Equipment Quotes** - where applicable with no page limit
- **Equipment Business Case** - is required for any items or combined assets with a value above £138,000 - maximum of two A4 sides.

Do not upload any other attachments. If submitted they will not be put forward for peer review.

### Case for Support

Case for Support, totalling up to eight A4 sides, comprising up to two A4 sides for a track record, and six A4 sides describing proposed research and its context. This must be attached, as a single document, using the 'Case for Support' attachment type in Je-S. Advice on what to include in the case for support is appended below.

<https://epsrc.ukri.org/funding/applicationprocess/preparing/writing/caseforsupport/>

### Pathways to Impact

In the Pathways to Impact attachment on Je-S, use a maximum of two A4 sides to describe potential beneficiaries and how your research may impact them and how you will facilitate this. Ideally, the Pathways to Impact attachment is specific to users and beneficiaries outside the academic research community, but may include academic impact where this forms part of the critical pathway towards

economic and societal impact. Detailed guidance on Pathways to Impact is available.

<https://epsrc.ukri.org/funding/applicationprocess/preparing/impactguidance/>

### **WorkPlan**

The work programme, maximum of one A4 side, should be illustrated with a simple diagrammatic work plan, such as a Programme Evaluation and Review Technique (PERT) or Gantt chart.

### **Justification of Resources**

The Justification of Resources, taking up to two A4 sides, should explain the necessity of your requested resources to your research project, including implementing the Impact Plan. This helps reviewers make informed judgements about whether the resources requested are appropriate for the research proposed.

So nothing is missed, EPSRC recommend that you follow the 'Cost to the Proposal' headings used in the application form. For more information on what to do, see how to write a Justification of Resources.

<https://epsrc.ukri.org/funding/applicationprocess/preparing/writing/jor/>

### **Curricula vitae (CVs)**

CVs, not exceeding two A4 sides each, should be submitted as a separate attachments using Attachment Type 'CV' in Je-S, and are only required for named research staff or visiting researchers. For visiting researchers, include details of previous visits or collaborations with overseas researchers. CVs are not required for the Principal or Co-Investigators.

### **Project partners letter of support**

As part of the impact assessment, reviewers comment on whether a collaboration is appropriate; therefore, a good Project Partner Letter of Support shows that the collaboration is genuine, and explains why the project partner supports the project.

A Project Partner Letter of Support, from each project partner listed, must be included as an attachment. There is no page limit, but letters should be on headed paper, and be signed and dated within six months of the proposal submission date.

Letters should be project relevant, written by project partners when the proposal is being prepared, and dated within six months of the proposal submission date. Standard letters declaring general support for a project are often criticised by reviewers. For more information, see guidance on what makes a good project partner letter of support.

<https://epsrc.ukri.org/funding/applicationprocess/preparing/writing/lettersofsupport/>



## Letters of support

In exceptional circumstances, EPSRC accepts Letters of Support that do not meet the requirements for Project Partner Letters of Support. This occurs when an organisation cannot be listed as a project partner, for example when the host institution wants to detail a proposed contribution to the cost of the equipment. However, unless there are exceptional reasons why an organisation cannot meet the requirements to be a project partner, EPSRC will not accept Letters of Support.

There is no page limit for the Je-S attachment, but a maximum of **three** letters is permitted and letters should be on headed paper, and be signed and dated within six months of the proposal submission date.

## Equipment quotes

Three quotations for any equipment costing more than £25,000 should accompany the proposal. For equipment in the range £25,000 to £138,000, quotations obtained verbally are acceptable and should be detailed in the proposal. Three written quotations are required for single items of equipment costing more than £138,000 and must accompany the proposal. Quotes should include VAT, delivery charges and incorporate any standard academic discounts. Fewer quotes are acceptable if justification is provided in the Justification of Resources. For any items or combined assets with a value above £138,000 a two-page Equipment Business Case must also be included in the proposal documentation.

Where you believe that there are less than three potential suppliers for an item you should explain this in the Justification of Resources.

Applicants should use the Ethical Information section on the Je-S form to demonstrate to peer reviewers that they have fully considered any ethical issues concerning the material they intend to use, the nature and choice, current public perceptions and attitudes towards the subject matter or research area. EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. All relevant parts of the Ethical Information section must be completed. If the research will involve human participation or the use of animals covered by the Animals (Scientific Procedures) Act 1986 it is recommended that applicants pay particular attention to the guidance highlighted below. EPSRC reserves the right to reject applications prior to peer review if the Ethical Information sections are not completed correctly.

Further guidance on completing the Je-S form can be found at <https://je-s.rcuk.ac.uk/Handbook/pages/GuidanceonCompletingaStandardG/EthicalInformation.htm>. Other relevant guidance includes: EPSRC's policy on animal use in research (<https://www.epsrc.ukri.org/about/standards/animalresearchpolicy/>) and the Responsible Innovation Framework (<https://epsrc.ukri.org/research/framework/>).

Please note that on submission to EPSRC **all** non-PDF documents uploaded onto Je-S are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

For advice on writing proposals see:

<https://epsrc.ukri.org/funding/howtoapply/preparing/>

## **Assessment**

### **Assessment process**

**Applicants intending to submit a proposal must indicate a desire to do so no later than 16:00 on Thursday 14<sup>th</sup> March 2019 via the SmartSurvey link on the call page.**

The Intent to Submit stage will request the PI name, Institution and the project title. The Full Proposal stage will assess the proposal against the below criteria via an expert interview panel.

### **Assessment criteria**

#### **Vision and Quality (Joint Primary):**

- The likelihood that the project will deliver step-change in knowledge and understanding of the topic
- The ambition and adventure of the research
- The innovative approach, relationship to the context and timeliness
- The appropriateness of the proposed methodology

#### **Quality of the Applicants (Joint Primary)**

- the standing of the applicants as demonstrated by their track record
- The appropriateness of their expertise to the proposed research

#### **Impact (Secondary)**

- Potential of the research to advance the commercial application of battery technology
- The relevance and appropriateness of beneficiaries identified and collaborators proposed
- The understanding of how a breakthrough will contribute to the competitiveness of UK industry
- Contribution to other research areas, societal challenges, success of the UK economy, emerging industries

#### **Resources and management (Secondary)**

- The effectiveness of the proposed planning and management, including management of risk

- Appropriateness of the estimated resources (including equipment) to be requested

### Fit to the call (Secondary)

- Proposals must be within the range of the four topics, as noted above. EPSRC reserve the right to reject proposals deemed to be outside the scope of the call at any stage of the assessment process.

### Guidance for reviewers

Information about the EPSRC peer review process and guidance for reviewers can be found at: <https://epsrc.ukri.org/funding/assessmentprocess/review/>

Guidance for reviewing standard grants can be found here:

<https://epsrc.ukri.org/funding/assessmentprocess/review/formsandguidancenotes/standardgrants/>

### Key dates

Activity	Date
Deadline for Intent to Submit	14 March 2019 at 16:00
Deadline for Full Proposals	4 <sup>th</sup> April 2019 at 16:00
Interview Panel	W/C 29 April 2019
Funding decision	W/C 6 May 2019
Indicative Grant start date	1 July 2019

\*The Faraday Institution and EPSRC aims to adhere to the key dates as published, however there may be exceptions where the sift, prioritisation or interview meeting may have to change due to panel member availability.

### Additional Information

As part of the Evaluation of Faraday Battery Challenge, UKRI will share details of applicants (including PIs and Co-Is), successful or not, with external parties undertaking this work. These companies will then contact applicants about being involved in this process

### Contacts

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## Change log

Name	Date	Version	Change
Bill McAlister	29/01/2019	1	N/A

## Je-S attachments Check List

Attachment Type	Maximum Page length	Mandatory/Optional	Extra Guidance
Case for Support	Eight pages	M	Comprising up to two A4 sides for a track record, and six A4 sides describing proposed research and its context.
Pathways to Impact	Two pages	M	
Workplan	One page	M	
Justification for Resources	Two pages	M	
CVs	Two pages each	As Required by EPSRC	For named and visiting researchers, and researcher co-investigators only.
Project Partner Letters of Support	No page limits	As Required by EPSRC	Must be included from all named project partners. Must be on headed paper, and be signed and dated within six months of the proposal submission date.
Letters of Support	No page limits	As Required by EPSRC	In exceptional circumstances a maximum of three letters can be submitted.

Equipment Quotes	No page limits	As required by EPSRC	
Equipment Business Case	Two pages each	As required by EPSRC	Required for any items or combined assets with a value above the OJEU limit.
Technical assessment	No page limit	As required by EPSRC	
Proposal Cover Letter	No page limit	Optional	The cover letter can be used to highlight any important information to EPSRC. This attachment type is not seen by reviewers or panel members.
Other attachment	No page limit	As required, at EPSRC request only	This can be used for a document that does not fit under any of the headings above. This attachment type is not seen by reviewers or panel members.

Please ensure you adhere to the above attachment requirements when submitting your proposal. Any missing, over length or unnecessary attachments may result in your proposal being rejected.