

Call for Projects

EPSRC Future Composites Manufacturing Research Hub

Call Type: Invitation for Proposals – Composites Hub Synergy Promotion

Closing Date: 17:00 Friday 8 April 2022

Related themes: Manufacturing the Future

Summary

The **EPSRC Future Composites Manufacturing Research Hub** is calling for proposals at TRLs 1 to 3. Funding is available for novel research in manufacturing technologies pertinent to the priority areas identified by the Hub (see Scope of the Call).

The call is open to all UK academics eligible to receive EPSRC funding and is the primary mechanism for new academic collaborators to engage with the Hub. Proposals must have a minimum of two university partners.

Proposals are envisaged to have a maximum duration of 12 months and must be completed by 31 August 2023. The maximum grant is expected to be in the order of **£100,000 at full Economic Cost (fEC) per academic partner**, with funding to be awarded at 80% fEC.

Key Dates

| Activity | Date |
|--|--------------------|
| Call Launched | 23 February 2022 |
| Expression of Interest form to be submitted | 8 March 2022 |
| Closing date for applications | 17:00 8 April 2022 |
| Evaluation of applications by | 17 May 2022 |
| Grants announced and feedback given by | 24 May 2022 |
| Projects must start by 1 September 2022 | |

Background

The **Future Composites Manufacturing Research Hub** was established in 2017 to engage academics from across the UK to deliver a step-change in the production of polymer matrix composites. Building on the success of the EPSRC Centre for Innovative Manufacturing in Composites (CIMComp), the Hub is driving the development of automated manufacturing technologies to deliver components and structures for demanding applications, particularly in the aerospace, transportation, construction and energy sectors. The Hub is led by the Universities of Nottingham and Bristol with 13 other academic Spokes and 4 High Value Manufacturing Catapult Centres, supported by 37 industry partners across a range of sectors and tiers.

Scope of the Call

The Synergy Promotion call provides funding to enable development of synergies between past and ongoing Hub research activity and new academic contributors, and aims to promote collaborative activity for emerging and novel research.

Research proposals should address challenges at low TRLs (1-3) and be aligned with at least one of the priority areas outlined by the Hub below. Proposals should demonstrate the potential to significantly improve the UK's manufacturing capabilities. Industrial partners are encouraged to support projects to help demonstrate a pathway to manufacturing and exploitation, although they cannot receive funding directly.

Research must be novel and fundamental, addressing low TRL (1-3) sustainability problems in composites manufacturing. Applicants are invited to submit proposals that are complementary to the current research being conducted by the Hub (www.cimcomp.ac.uk/#research).

Proposals must fit within one of the Hub's priority research themes:

1. High rate deposition and rapid processing technologies

Proposals in this area should focus on overcoming manufacturing related challenges to reduce material wastage and scrap, whilst ensuring suitable quality and rate. Projects developing new feedstock materials or conducting extensive material test programmes will not be funded.

2. Design for manufacture via validated simulation

Proposals in this area should focus on the virtual design and development of composite manufacturing processes, capable of establishing process viability and arising component quality. Simulation tools for example, could support the design for disassembly and value recovery of end of life materials.

3. Manufacturing for multifunctional composites and integrated structures

Proposals in this area should demonstrate cost-effective and sustainable routes to produce multifunctional composite structures at high rate, reducing energy consumption and CO₂ during manufacturing as well as in-service. Multifunctionality may include mass/ heat/ charge transport capabilities, but these must be delivered within structural configurations, such as doubly-curved surfaces, sandwich panels and plates with stiffeners. Projects developing new multifunctional material formulations will not be funded.

4. Inspection and in-process evaluation

Proposals in this area should focus on developing or improving the capability to make in-process measurements to evaluate preform or component quality, enabling corrective action to be taken to

reduce/eliminate rework and scrap. Projects developing inspection and NDT techniques for post-moulded or in-service components will not be funded.

5. Recycling and re-use

Proposals of interest in this area include demonstrating manufacturing methodologies with the potential to produce structural components from recyclates at industrial production rates, reducing the dependency on virgin materials. This could include life cycle analysis studies to demonstrate the reduction in energy consumption for new manufacturing technologies that utilise composite recyclates. Projects developing new recycling methods or characterising the properties of recyclates from new fibre recovery methods will not be funded.

Sustainability is a global priority requiring a huge drive for change, with demanding zero-carbon legislation targets to meet across all industries, in a bid to reduce environmental impact. Composites offer lightweighting to reduce emissions and improve durability to increase service life, but more can be done to reduce the overall carbon footprint during the component manufacturing stage and at the end of life. All proposals should include a sustainability statement, regardless of the theme being addressed, making it clear how the research will improve the sustainable manufacture of fibre reinforced composites for high-performance applications. Proposals will only be funded if they express a clear benefit to improving the sustainability of composite components during the manufacturing phase, beyond the well-established lightweighting benefits anticipated during the in-service phase.

Only fibre reinforced polymer composites are of interest, with nanomaterials and graphene considered to be out of scope. Informal enquiries are welcome to ensure proposal ideas are within scope. Further details of the scope of this call can be found in the Annex below.

Funding available

The Hub is seeking to fund between 3 and 6 Synergy Promotion projects in our defined subject areas. The maximum budget available for each partner per project is £125k fEC, of which 80% will be funded by the Hub (i.e. the maximum grant per partner is expected to be in the order of **£100,000**). Maximum project length is 12 months and funding is intended to cover the costs of the PI and supporting researchers in undertaking their research project. Projects must commence by 1 September 2022 and end by 31 August 2023. Funding will primarily cover staff time (including associated Indirect and Estates costs), with the remainder supporting consumables and travel. Funding for PhD students is not available.

Equipment

Funding for the purchasing of equipment is not eligible.

The Hub is committed to supporting the UK's research community and can provide access to facilities and equipment at cost to proposals funded through this call (subject to terms and conditions agreed on a case by case basis). If you believe that your proposal would benefit from access to specialist equipment, please contact Alex Hammond, Hub Deputy Manager for advice on cost and availability, which can then be incorporated into your proposal.

Eligibility

This call is open to all UK academic institutions (including existing Hub and Spoke institutions), where applicants must be eligible to hold an EPSRC grant. If you need guidance on eligibility, please visit <https://www.epsrc.ac.uk/funding/howtoapply/fundingguide/eligibility/investigators/>.

How to apply

Applications should be submitted in PDF format to the Hub Deputy Manager using the contact details provided below.

Applications should be no more than six sides of A4, using 2cm margins and a standard 11pt Arial font. Proposals should include, but not be limited to, the following content:

1. Start date and duration. Maximum duration 12 months (to end no later than 31 August 2023).
2. Research title, lead institution and Principal Investigator (PI) and Co-Investigator(s). At least two university partners should be included in the proposal.
3. A statement should be included indicating who the other university partner(s) are and their responsibilities/involvement in the project, describing the added value of the interaction between partners.
4. A statement should be included indicating how the proposal supports one or more of the Hub research priority areas, and describing the potential synergy created with existing Hub projects.
5. Research vision (explaining how it fits within the overall vision of the Hub), context and objectives. Highlight the novelty, timeliness and transformative aspects of the project. List the research objectives clearly.
6. Methodology. Provide a detailed description of the methodology to be used. Clearly identify the key elements of your idea and the breakthrough principle(s) that need to be validated to achieve success. Include one or more milestones that will form the fastest route to validating these key breakthrough principle(s).
7. Diagrammatic work plan (one page annex). Include milestones and deliverables, and indicate staff resource allocation for all partners.
8. Project risks. What are the risks to project success and how will these be managed?
9. Impact summary. Who are the non-academic beneficiaries or end-users of the research and what opportunities does it offer them? How will you engage with these beneficiaries and what resources do you require to support this?
10. Exploitation. What are realistic routes for exploitation at the end of the Project (Commercialisation, catapult scale-up, follow-on funding)? How will you attract the necessary investment/funding?

11. A brief track record of the applicants, relevant to this research area, particularly if the institution is not currently a Hub Spoke.

Justification of Resources (JoR) (one page annex)

Costings should be justified on the basis of full economic costs (100% fEC). The JoR should justify the resources required to undertake the research project, taking into account the nature and complexity of the proposal. All costs should be organised according to the standard JeS cost headings, including Directly Allocated (investigators), Directly Incurred (researchers, technicians, travel, consumables etc.), and Indirect Costs. A summary table should be included using the format below.

The Hub does not support the costs for PhD students – it is expected that these will be covered by the host institution. Funding for purchasing new equipment is not permitted. A limit of 3.75hrs/week (in total) is imposed for all investigators at each institution. Further details of eligible costs can be found here:

<https://www.epsrc.ac.uk/funding/applicationprocess/preparing/writing/jor/>

Please note that, on assessment the Hub reserves the right to ask the PI to reduce the requested resources in any category.

| Summary | Funding type | FEC (100%) | Grant Sought | RC % |
|--------------------|-----------------------|------------|--------------|------|
| Directly Incurred | Staff | | | 80% |
| | Travel & subsistence | | | 80% |
| | Other Costs | | | 80% |
| | Sub Total | | | |
| Directly Allocated | Investigators | | | 80% |
| | Estates | | | 80% |
| | Other DA | | | 80% |
| | Sub Total | | | |
| Indirect Costs | Indirect Costs | | | 80% |
| | Total | £ | £ | |

Assessment process

Submissions will be considered by a panel consisting of Hub Investigators supported by independent assessors to ensure a fair and unbiased process. In order of importance, the evaluation criteria for applications will be:

1. **Suitability:** Does the proposal address one or more of the topics outlined in the call and is the proposal at an appropriate TRL?
2. **Research Quality:** Is the proposal likely to result in high quality research outcomes, in the form of journal publications, patents etc.?
3. **Synergy:** Does the proposal link to past or current Hub research and does it promote collaborative research involving at least two academic partners?
4. **Novelty:** Does the proposal contain genuine scientific novelty and is the work timely? Is it being addressed elsewhere?
5. **Relevance:** Is the proposal relevant to the interests of industrial partners or represent the opportunity to significantly improve the U.K.'s manufacturing capability?

6. **Ambition:** Does the proposal offer suitable levels of challenge, ambition and risk? High-risk, high-return studies are encouraged.
7. **Potential:** Is the approach credible and will the team be able to deliver? Is there potential for developing a larger collaborative project, either at a similar fundamental level or at higher TRLs?
8. **Planning:** How well has the proposal been planned? Are the requested resources appropriate to deliver the proposed programme within the timeframe and have they been fully justified?

Proposals and enquiries should be directed to lee.harper@nottingham.ac.uk or Alex.hammond@nottingham.ac.uk

Contacts

Applicants are asked to consult their university's research office ahead of submitting a proposal to this call, in order to be clear of the requirements for meeting the deadlines set out above.

For more details, please contact alex.hammond@nottingham.ac.uk

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