



Formulated products –  
meeting the product and  
process design challenge

**COMPETITION FOR FEASIBILITY  
AND COLLABORATIVE R&D FUNDING  
APRIL 2013**

# Formulated products – meeting the product and process design challenge

## COMPETITION FOR FEASIBILITY AND COLLABORATIVE R&D FUNDING

### Summary

The Technology Strategy Board is to invest up to £5m in feasibility projects and collaborative research and development to accelerate the development of new ways of designing, improving and manufacturing complex high-value formulated products in sectors such as pharmaceuticals, cosmetics, detergents, food, agrochemicals, paints, adhesives, lubricants and formulated process chemicals. A further £1m is available for collaborative research and development from the Engineering and Physical Sciences Research Council (EPSRC).

The formulated products market in the UK is worth around £180bn a year. This competition is designed to support innovative developments which overcome the challenges facing the formulated products industry.

This competition has two strands:

**Strand 1** makes up to £5m available for **collaborative R&D projects**. These must be business-led, include an end user formulating company, and last one to three years. Businesses can attract up to 50% public funding for their project costs (60% for SMEs). Projects will focus mainly on industrial research.

**Strand 2** offers up to £1m for **feasibility projects**. These must be business-led, may be collaborative or led by single companies, and should last six to nine months. Businesses can attract up to 65% public funding for their project costs (75% SMEs).

Projects are expected to have a total value (including grant and private sector contributions) of up to £1m for collaborative R&D and up to £100k for feasibility projects. Projects larger than this are eligible to apply but applicants should first contact **competitions@innovateuk.org** before submitting their expression of interest.

The competition opens on **29 April 2013**. The registration deadline for both strands is **12 June 2013**. The deadline for applications for feasibility projects is noon on **19 June 2013**. There is a two-stage process for collaborative R&D projects. Expressions of interest must be submitted by noon on **19 June 2013** and the deadline for invited applications is noon on **29 August 2013**. A briefing day for potential applicants for feasibility and collaborative R&D funding will be held on **1 May 2013**.

### Background and Challenge

Complex formulated products (for example pharmaceutical tablets and suspensions, cosmetic creams and gels, detergent powders and liquids, processed foods, paints, adhesives, lubricants and pesticide granules) are ubiquitous in everyday and industrial life. The UK market for formulated products is worth around £180bn a year, with a potential in emerging overseas markets of around £1,000bn (*Chemistry Innovation KTN Strategy Report 2010*).

The market in associated up-stream supply chain materials and enabling capabilities (ingredients, process technology equipment, laboratory equipment, services and consultancy) is of a similar size.

Many multinationals active in formulation have R&D and manufacturing bases in the UK. This industrial base is supported by UK academic expertise, including in colloid science, surfactants, particle design, nanotechnology, particle processing, materials science, measurement, high-throughput automation and computational methods for modelling and simulation.

We recognised the importance of formulation in our *High value manufacturing strategy* (**www.innovateuk.org** under publications/strategy), which named 'understanding, manufacturing and designing formulated products' as a strategic national competency.

Despite diversity in end-use applications, many companies are faced with common challenges. Formulated products may be externally distinct but they share very complex microstructures, which determine the product attributes.

Achieving the precise effect in a formulated product cost-effectively and with minimal impact on the environment is key to the UK's future competitiveness in high-value manufacturing. However, the harnessing of complex formulation behaviour through R&D, scale up, manufacturing, distribution and use is immature. Historically, the application of basic scientific knowledge to real, complex technological problems has proved difficult – so companies often rely on trial-and-error approaches.

This competition addresses these issues by encouraging proposals which include collaborative partnerships and which demonstrate excellent use and development of scientific knowledge.

### Scope

We will fund projects that enable the development of innovative approaches to the design and manufacture of complex high-value formulated products. Applications may come from any sector closely involved in formulated products. Applicants must show that their proposal falls within one or more of the following themes.

#### **Radical formulated product design:**

Methods to accelerate the design and optimisation of new formulated products throughout the chain from R&D to production and the market. Exploiting convergence and advances in measurement, modelling and simulation, experimental design, data management/informatics, automation and miniaturisation. Outputs will enable better fundamental understanding, extended coverage of experimental space, acceleration of R&D and smoothing of new product development and launch.



**Formulation for delivery:** Technologies that enable or improve the precisely controlled and targeted use of ingredients or that provide radically new formulation architecture or product microstructure. Approaches could include the development and innovative uses of encapsulation, polymer, surfactant or nano-material technologies.

**Radical formulation process design:** Technologies that can be implemented in a production environment to provide better products, improved quality or a significant economic or environmental benefit. Radical approaches may be paradigm-led, for example continuous, flexible, adaptive, distributed, concurrent product and process design, integrated primary and secondary manufacturing. Examples of novel process technologies could include high-intensity mixing, membrane technologies and microfluidic arrays. Innovative developments and use of in-process analysis, measurement, modelling and process controls are also in scope.

**Formulation for stability:** New methods for prediction, measurement, characterisation, control and optimisation of the stability of complex products that can bring economic or environmental benefits. Methods may be implemented in R&D or manufacturing/quality control environments. Business benefits may include faster new product development, more robust manufacture, regulatory compliance, better supply chain management and improved shelf-life claims.

**Formulation for sustainability:** Integrated product and process design that considers ingredient sources, the impact of production processes as well as the end-use of formulated products. Projects should deliver environmental, societal and economic benefits. Integrated approaches that consider the whole product life-cycle: ingredients and their sources, production, transport, storage, end-use, disposal, recycling and re-use.

### Assessment of proposals

Applicants must show how their project leads to quantifiable economic benefits for the industrial partners. This benefit may be realised for instance through development of:

- a new product leading to increased sales
- knowledge leading to new services being offered to the market
- better processes leading to lower costs and improved market opportunities.

Applicants should show, where possible, how the project leads to environmental or social benefits. Proposals should demonstrate innovation and indicate a clear scientific, technological and/or structural hurdle to be overcome.

Projects that demonstrate a strong collaborative nature are encouraged. This may include collaborations:

- between companies in non-competing industries that face common technical challenges
- between same-sector companies developing pre-competitive enabling/platform technologies
- along supply chains
- involving SME/SME or SME/large company partnerships
- that make new use of academic or non-academic expertise
- that demonstrate how scientific understanding (new and established) will be used for the first time to meet industry needs.

Applications can come from any sector, however the project must have at its heart the design, manufacture or end-use of a complex formulated product.

We anticipate that many project proposals could be carried out together with (or within) the High Value Manufacturing Catapult ([www.catapult.org.uk/high-value-manufacturing](http://www.catapult.org.uk/high-value-manufacturing)).

### Funding allocation and project details

The Technology Strategy Board and the EPSRC have allocated up to £6m to fund collaborative R&D and feasibility projects that address the technical challenges outlined in the scope.

This competition has two strands:

**Strand 1** Up to £5m is available for **collaborative R&D projects**. These must be business-led, include an end user formulating company and last one to three years. Businesses can attract up to 50% public funding for their project costs (60% for SMEs). Projects will focus mainly on industrial research.

**Strand 2** Up to £1m is available for **feasibility projects**. These must be business-led, may be collaborative or led by single companies, and should last six to nine months. Businesses can attract up to 65% public funding for their project costs (75% for SMEs).

Projects are expected to have a total value (including grant and private sector contributions) of up to £1m for collaborative R&D and up to £100k for feasibility projects. Projects larger than this are eligible to apply but applicants should first contact **competitions@innovateuk.org** before submitting their expression of interest.

Available funding includes up to £1m from the EPSRC. It will consider funding project work packages carried out by academic collaborators that demonstrate the need for a more fundamental scientific approach to the challenges in manufacturing complex formulated products, especially where this builds on their existing investments in this area. Applicants invited to apply for Stage 2 of the collaborative R&D strand of the competition should identify such work packages at this stage. The academic component cost of a project should not exceed 30% of the total.



Successful project participants can attract grant funding towards their eligible project costs. The percentage of costs that we pay varies, depending on the type of research being carried out and the type of organisation involved.

**N.B** the funding rules for projects changed in September 2012. For general guidance on how projects are now funded see: <http://www.innovateuk.org/competitions/guidance-for-applicants/funding-rules.ashx>

## Application process

The competition opens on **29 April 2013**. The deadline for registration for both strands is at noon on **12 June 2013**. The deadline for applications for feasibility projects is noon on **19 June 2013**. There is a two-stage process for collaborative R&D projects. Expressions of interest must be submitted by noon on **19 June 2013**. The deadline for invited applications is noon on **29 August 2013**. A briefing day for potential applicants for feasibility and

collaborative R&D funding will be held on **1 May 2013** to highlight the main features of the competition and explain the application process. **Applicants are strongly recommended to attend this event.**

**Note: All deadlines are at noon.**

## More information

To apply for this competition you must first register with us. You can do this by going to the web page for this competition at [www.innovateuk.org](http://www.innovateuk.org) under Competitions. When you register you will get access to all the supporting information you need to read before you apply, including the *Guidance for Applicants* and the application form.

Competition helpline:  
0300 321 4357

Email:  
[competitions@innovateuk.org](mailto:competitions@innovateuk.org)

## Key dates

Competition opens	<b>29 April 2013</b>
Briefing and consortium building event	<b>1 May 2013</b>
Registration deadline	<b>12 June 2013 noon</b>
Deadline for feasibility applications	<b>19 June 2013 noon</b>
Deadline for expressions of interest (EOI) for CR&D applications	<b>19 June 2013 noon</b>
Stage 2 opens for invited applicants – CR&D strand only	<b>15 July 2013</b>
Deadline for invited applications	<b>29 August 2013 noon</b>

## Publicity

As part of the application process all applicants are asked to submit a public description of the project. This should adequately describe the project but not disclose any information that may impact on intellectual property, is confidential or commercially sensitive. The titles of successful projects, names of organisations, amounts awarded and the public description will be published once the award is confirmed as final. Information about unsuccessful project applications will remain confidential and will not be made public. E-mail [pressoffice@tsb.gov.uk](mailto:pressoffice@tsb.gov.uk) with any queries.

*The Technology Strategy Board is a business-led executive non-departmental public body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve quality of life.*

The Technology Strategy Board  
North Star House  
North Star Avenue  
Swindon SN2 1UE

Telephone: 01793 442700

[www.innovateuk.org](http://www.innovateuk.org)

