IN-PART DISCOVER

Industry Call for Opportunities

Biomaterials for High-barrier and Heat-sealable Paper Coatings

one.five is seeking **biodegradable and bio-based materials for high-barrier** or other **functional** (e.g., **heating-sealing, food contact safe**) **paper coatings**. This includes single substance as well as composites and multi-layer systems. Natural polymers directly extracted from biomass without further chemical modification that can be applied to flexible or rigid paper-based food packaging are of particular interest.

Materials of Interest:

- General: Polysaccharides, polypeptides, other polymers or functional mono- or oligomeric compounds (e.g., lipids) originating from plants, animals, fungi and bacteria
- Basic materials: Cellulose, starch, lignin, chitin, chitosan, pectin, zein, soy, rice or pea protein, hordein, gluten, carrageenan, alginate, agar, natural latex & gums, casein, whey protein, collagen, cutin, rosin, shellac or natural waxes
- Advanced technologies and composites: Nanocellulose fibrils and crystals, microfibrillated cellulose, bio-based nanowhiskers and nanofibers, hallosites, nanoclays (MMT, VMT, etc.), nanographene, vermiculite layered double hydroxide (LDH), metal oxide nanoparticles, or any other novel nanomaterial

Desired Properties:

- Preferred coating methods include extrusion, lamination or aqueous dispersion coating techniques
- High barrier requirements at ultra-thin layers/films ((1-5 µm or 1-5 gsm). High performance at layer thicknesses of 5-10 µm (or 5-10 gsm) will also be considered but must not be thicker than 20 µm or 20 gsm
- Preferred barrier performances include WVTR: < 0.1 g/m2·day or <10 g/m2·day at 23°C, 85% r.h.; OTR: < 0.1 cm3/m2·day or < 10 cm3/m2·day at 23°C, 50% r.h.; KIT level: 10-12 and odour (sensory): < 2,5 (Robinson test) for odour barrier, or a combination thereof
- Heat sealable with a seal strength of minimum 7 N/45mm
- Comparable mechanical properties to the conventional plastics often used in packaging such as PE, PP and PET
- Biomaterials without significant barrier potential must be thermoplastics or plasticisable with bio-based and/or biodegradable plasticisers

Stage of Development: Opportunities at TRL3 and above are within scope, providing there is proof of concept or experimental validation. Research that can be rapidly scaled to market is of particular interest.

Opportunity for Collaboration: Potential collaborations will be assessed on a case-by-case basis, with example outcomes including research collaborations, consulting/advisory agreements, and licencing.

Submission Information: Submission of one page, 200-300 word briefs are encouraged, along with any optional supplementary information (e.g. relevant publications, patents, slide decks). In submitting to this campaign, you confirm that your submission contains only non-confidential information.

Opportunities sought

- Technologies
- Academics and expertise
- Centres of excellence
- Research projects
- Spinout companies

Submissions

Please submit relevant, non-confidential opportunities online via: discover.in-part.com

Deadline: **6th February 2023 - 11:59 pm GMT**

Have any questions?
Contact our team at discover@in-part.co.uk

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one.five is a biomaterials development platform transforming material science solutions into better packaging applications. They work with FMCG and packaging companies on their most pressing challenges, and offer their partners to combine nascent technologies with their co-development expertise, equipment and access to funding.