

# Lightweight ultra and extreme high vacuum compatible composite material for high electromagnetic shielding

Novel design for lightweight composite material that is compatible with ultra and extreme high vacuums and provides high electromagnetic shielding.

**Applications:** High energy physics, quantum computing, aerospace, automotive industry, electric vehicles, medical devices



| Features                                                                                                                             | Benefits                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Novel manufacturing method allows homogenous materials to be incorporated into composite structures with resulting uniform thickness | Thinner structures can be consistently manufactured to tolerance; Easy way to lightweight structures for multiple uses |
| The ultra-thin lightweight composite material is compatible with ultra and extreme high vacuums                                      | No outgassing from the material into the vacuum; One or both sides of the material can be hermetically sealed          |
| Material provides high EMI/RFI shielding, and approaches net zero magnetic permeability                                              | Provides lightweight electromagnetic shielding; Reduces the amount of material needed for shielding                    |

| Features                                                                                                                                      | Benefits                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Can be manufactured to fit complex bespoke geometries                                                                                         | Cost effective and reduces complexity as it can be incorporated or retrofitted into desired design |
| The layers can be manufactured at micron level thickness and the type of material can be varied flexibly throughout a single composite object | Balance between EMI/RFI shielding, mechanical strength and thickness can be varied                 |
| The manufacturing method allows composite objects to be safely formed of non-hazardous low-Z materials                                        | Minimises unwanted absorption of entities passing through the composite object                     |

### Available for

- Co-development
- Consulting
- Licensing

To find out more, contact [enquiries@innovation.ox.ac.uk](mailto:enquiries@innovation.ox.ac.uk) and quote the project number.

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