

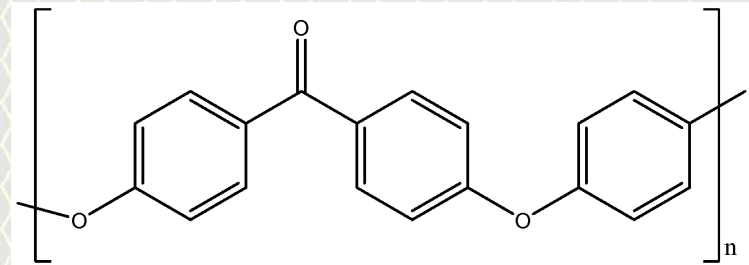
Graphene Modified PEEK

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Versarien Advanced Composites**

Polyaryletherketones

Super-engineering thermoplastics to address high performance applications

- Thermal resistance
- High use temperature
- High strength
- Good wear resistance
- Chemical resistance
- Thermal and electrical insulator
- Biologically compatible



Property Improvements

Injection moulded GNP XT / PEEK samples

- 21-32% improvement in modulus at 3wt% loading
- 21% improvement in UTS of the polymer matrix at 0.5wt% loading
- 17% improvement in elongation to break PEEK matrix at 3wt% loading

Innovate UK funded project



Property Improvements

Selective laser sintering feasibility study of GNP XT / PEEK

- Graphene incorporated into powders by standard mixing methods
- Mechanical properties of films enhanced by low graphene loadings
- Efficiency of melting of nanocomposites increased by graphene

Materials processing targets

- **Graphene enhanced formulations to address:**
 - Additive manufacturing
 - Fused deposition modelling
 - Selective laser sintering
 - Injection moulding
- Optimisation of graphene grade, loading and dispersion in PAEK matrix
- **Range of other graphene enhanced thermoplastics**

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 **Advanced
Composites** 



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GROUP**

Centre for Additive Layer
Manufacturing



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