The newly developed High Performance Discontinuous Fibre “HiPerDiF” method is a high speed process to produce highly aligned discontinuous fibres composites. This manufacturing method has been used to tailor the fibres organisation at ply level and control the material mechanical response and to process reclaimed fibres.

**Scientific approaches**

The HiPerDiF method offers **flexibility in shaping hybrid composites** with various fibre type, fibre length, preform pattern, resin type and fibre surface treatment.

**Novel architectures** of aligned discontinuous fibre can be generated for ductile response in composite materials.

**Hybrid ductile composites:**

Intermingled-hybrid aligned short fibre composites
- Fibre type: High modulus carbon & E-glass (3 mm)

**Industrial approaches**

New industrial applications of short fibre composites:
1) Remanufacturing of **recycled carbon fibres** into High structural performance composites;
2) Automated High-volume, defect-free manufacturing.

**Composite recycling:** Applications in Automated fibre placement, 3D printing...

**Recycled fibres remanufacturing:**
- High level of alignment leads to a high fibre volume fraction and therefore to high mechanical performances and high structural and economical value.
- The HiPerDiF method is a valuable instrument to produced tapes that are intrinsically easy to recycle and remanufacture recycled carbon fibres.

**Interlaminated/intermingled carbon/glass hybrids**

**Closed loop recycling**

**Intermingled virgin/recycling carbon hybrids**

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