New Ideas. ▶ **New Materials.**

Glass fiber reinforced polymers, left, correct, right, incorrect matrix

INM

▶ LAB TECHNOLOGY

TRANSPARENT GLASS FIBER REINFORCED POLYMER

OBJECTIVES

- ▶ Fabrication of highly transparent glass fiber reinforced polymer
- ▶ Improvement of mechanical properties of polymer material

METHODS

- ▶ Transparent polymer is reinforced with embedded glass fiber meshes
- ▶ Optical properties of polymer and glass mesh are matched for high transparency
- ▶ Adjustment of dispersion curve of matrix by addition of suiting additives
- ▶ Low temperature synthesis and process method

RESULTS

- ▶ Synthesis process and coating of fibers can be performed at low temperature (up to 120°C)
- ▶ Highly transparent composites with more than 30% weight reduction compared to glass
- ▶ Higher transparency than normal glass fiber reinforced polymers because of matched optical properties

APPLICATIONS

- ▶ Glass replacement → low weight, high transparency
- ▶ "Unbreakable" displays → no splintering of glass
- ▶ Lightweight windshields
- ▶ Transparent material for construction

Example developed at INM:

- ▶ **Clear transparent sheets**
- ▶ **1 mm thick, 10 meshes**
- ▶ **High transmittance**
- ▶ **Low haze**

CONTACT

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