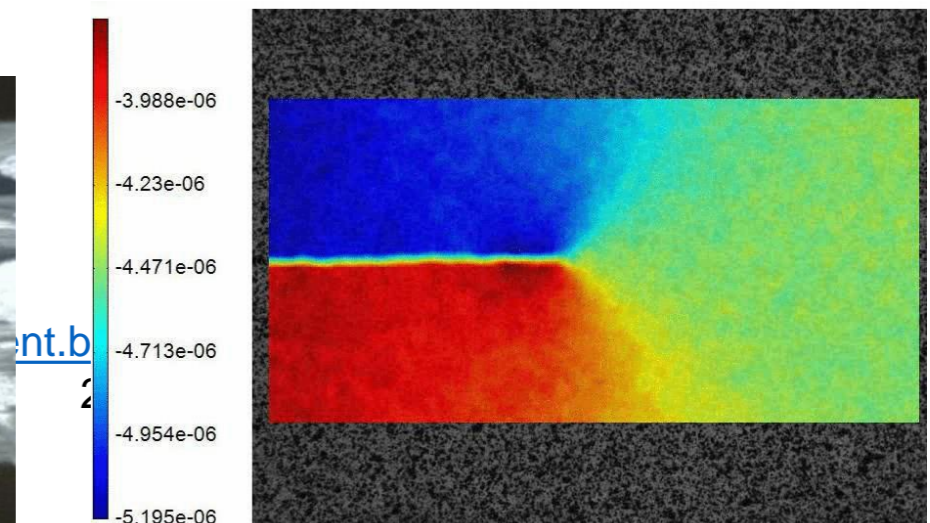
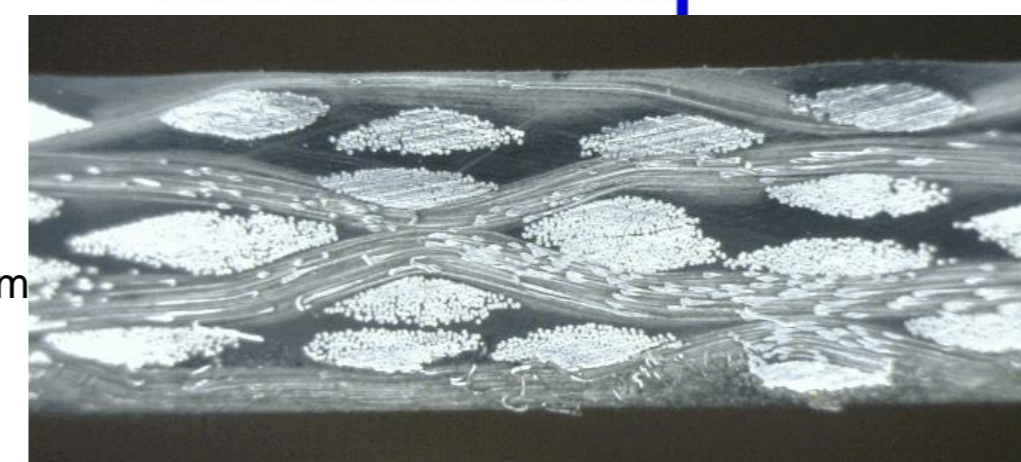
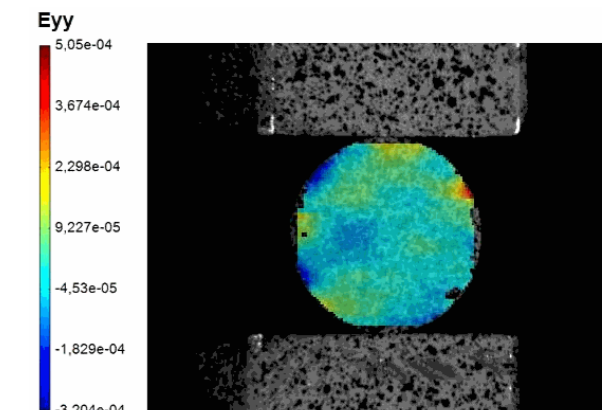
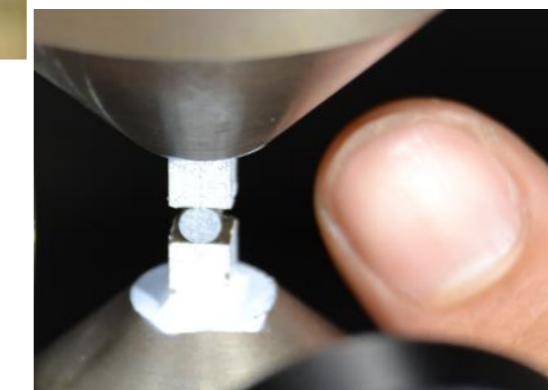
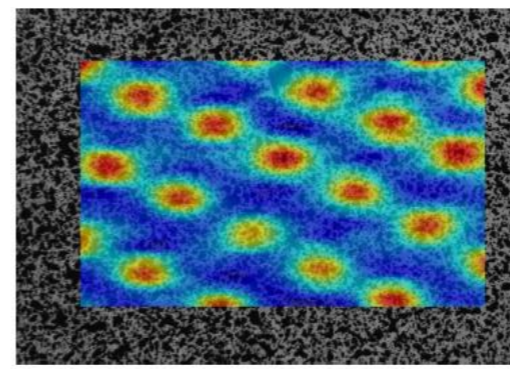
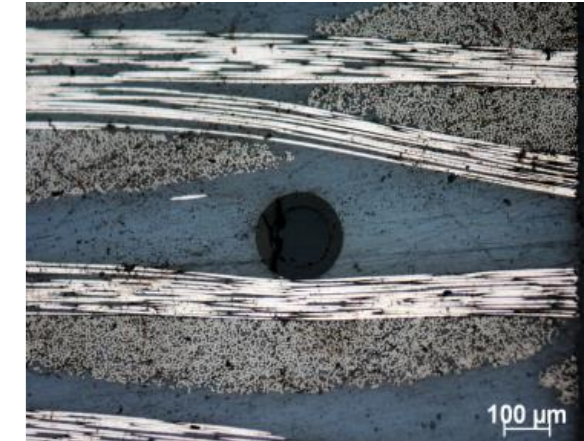
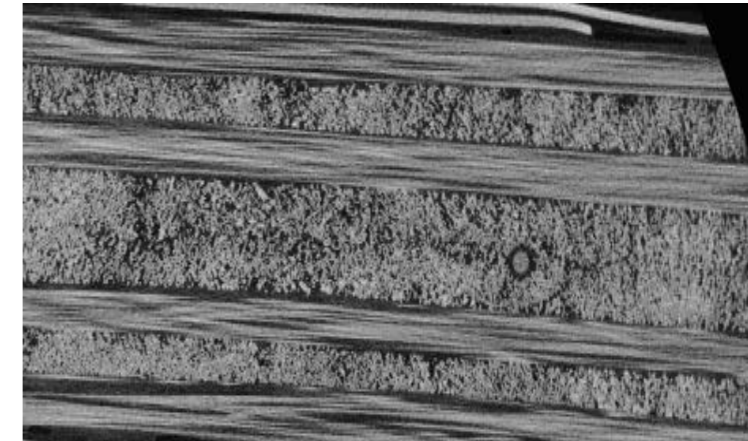


# KEY AREA 3 > NDT/NDE OF COMPOSITES

## Optics

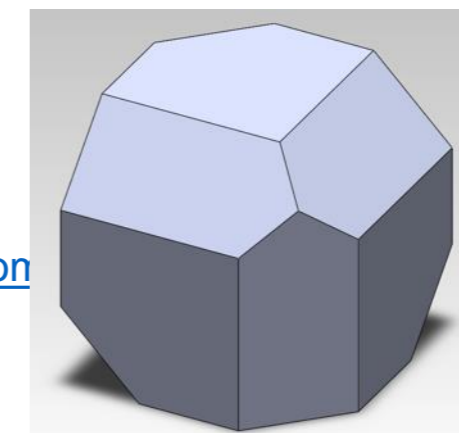
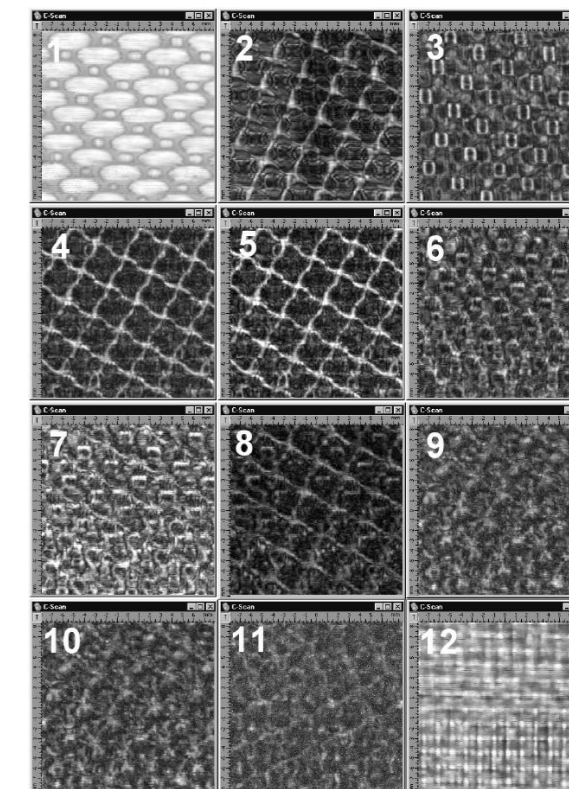
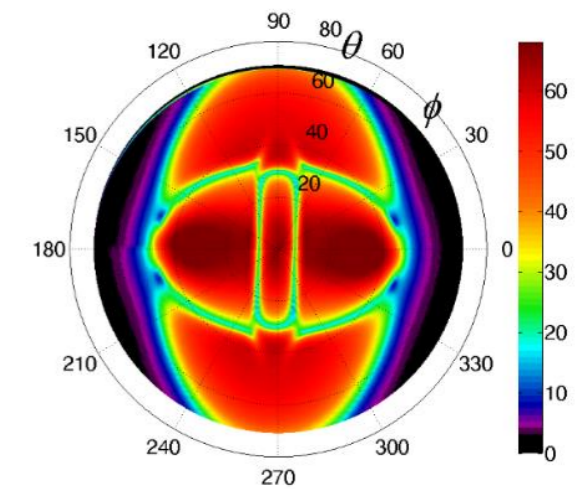
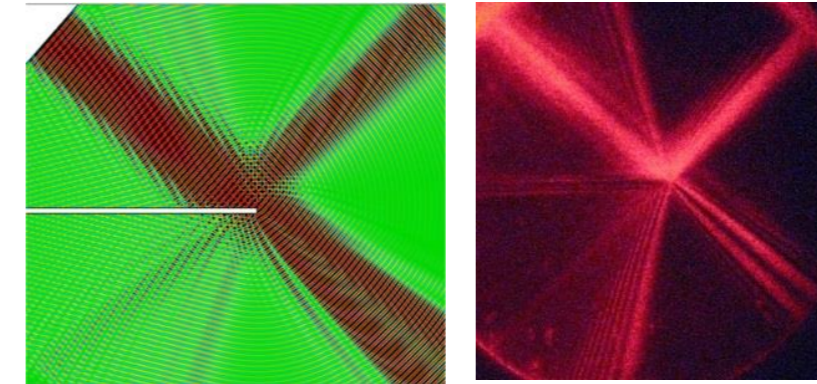
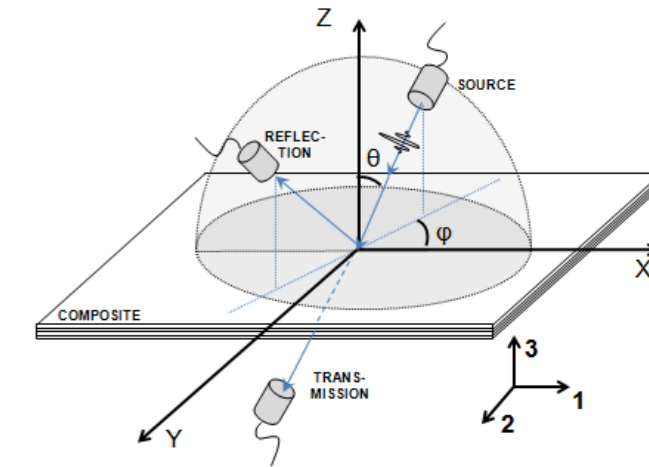
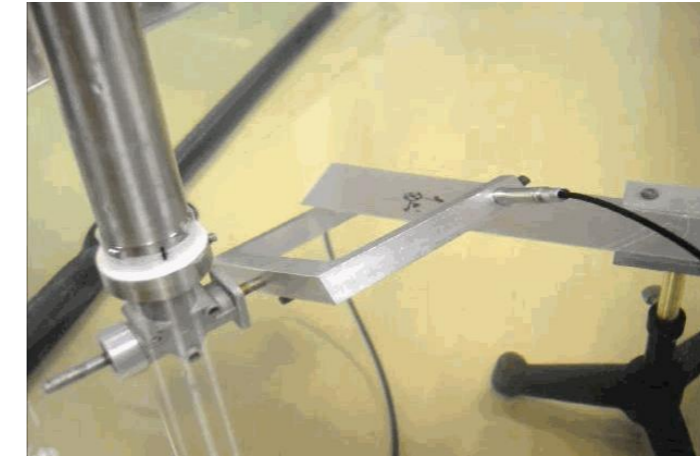
- Long-term experience with optical fibre sensors with Bragg grating -> developments towards 60  $\mu\text{m}$  multi-axial FBG's and miniaturised wireless read-out system
- Self-sensing composites -> strain sensing on chip, flexible electronics, cure monitoring with distributed sensing
- High resolution Digital Image Correlation (local variations in strain fields + contactless measurement of velocities, accelerations and contact forces )
- Wide expertise with grating techniques (projection moire, geometric moire)
- Measurement of rigid body rotations and displacements with optical grating methods
- Experience with digital photo-elasticity
- Online video microscopy
- Scanning Electron Microscopy of fracture surfaces



# KEY AREA 3 > NDT/NDE OF COMPOSITES

## Ultrasound

- Ultrasound inspection with ultrasound transducers and portable ultrasound phased array (64 probes) + FEM simulation of interaction of acoustic waves with anisotropic materials
- Identification of elastic stiffness tensor by ultrasound measurements on thin composite plates
- Ultrasound strain gauge for measurement of three orthogonal strains
- Visualization of ultrasound with acousto-optics (Schlieren imaging) and mechanoluminescence
- Detection and quantification of surface corrugations, corrosion and stiffness reduction
- Thickness measurement of coatings and substrates
- Measurement of full orthotropic elastic tensor by means of contact ultrasound



# KEY AREA 3 > NDT/NDE OF COMPOSITES

## Multi-disciplinary techniques

- Micro-tomography for nondestructive geometry reconstruction
- Capacitance sensors for cure monitoring or erosion monitoring
- GOA-project with 5 PhD's and 2 Postdocs -> self-sensing reinforcement fibres, mechanoluminescence, ...
- Acoustically induced Piezo-Luminescence
- Local Defect Resonance (LDR) for defect detection in composites
- Thermoelastic Stress Analysis (TSA) for full-field stress analysis and damage detection

