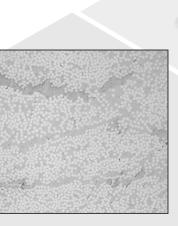
# GEODICT

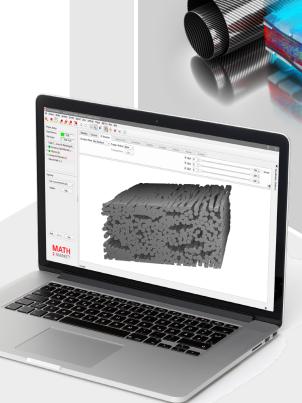
The Digital Material Laboratory

**GeoDict Workflow for Composites** 

# GENERATE MESHES OF THE DIGITAL COMPOSITE MODELS

- Microscale 3D models are generated easily with GeoDict based on parameter information collected from datasheets and micrographs. The 3D models include fibers as well as imperfections, such as voids.
- The 3D models are exported as triangulated mesh and used for simulations in all common FEA software tools
- The 3D models are easily modified to perform digital parameter studies aimed to understand the interdependence of material microstructure design and macroscale material properties, e.g. mechanical, flow, thermal, electrical, etc.







# **GEODICT® WORKFLOW FOR COMPOSITES**

Collect information on the composite from

- Micrographs fiber volume fraction, fiber distribution, fiber diameter, void content
- Data sheets fiber volume fraction, twist, yarn density, yarn count, fiber diameter
- Other laboratory experiments, such as resin burning-off method, acid digestion of resin

## **Result:** Description of the composite

Generate a fiber structure based on collected information, with

- Endless fibers
- Short and long fibers
- Curved or straight fibers
- Voids
- Uneven fiber distributions
- Misalignment

## Result: Digital 3D model of the composite

Combine fiber microstructures to generate laminates

- Multidirectional lay-ups
- Sandwich structures with foams
- Combination of unidirectional layers, weaves, and nonwovens

**Result:** Digital 3D Model of the laminate

- Generate a meshed model of the composite
- Export this mesh to use for further simulations in finite element (FEA) software, such as Ansys, Abaqus, LS Dyna

**Result:** Meshed model of the composite

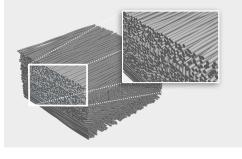
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Data Aquisition

Structure Generation

Stacking







2

3

1