

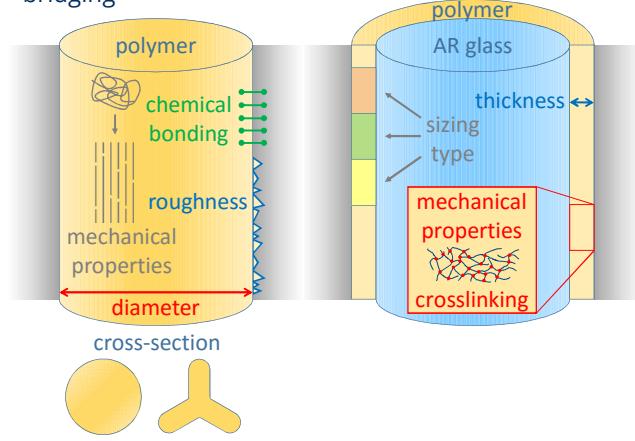
Enrico WÖLFL – Doctoral Project A2/I



FIBER-MATRIX INTERACTION IN MINERAL-BONDED COMPOSITES UNDER DYNAMIC LOADING

1 OBJECTIVES

- Fundamental investigation of the fiber/matrix interaction and analysis of the mechanisms that contribute to high energy absorption during crack bridging

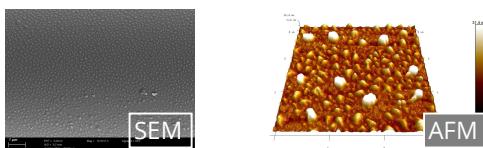


2 METHODS

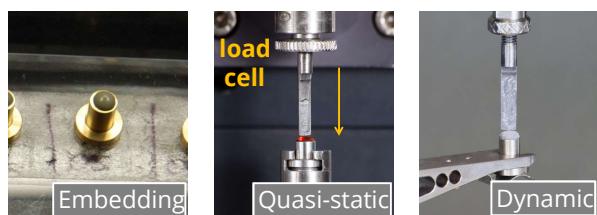
- Fiber production – melt spinning of AR glass and PP fiber with defined mechanical properties
- Sizing development – material selection and characterization of polymer films



- Fiber surface modification – dip coating procedure for homogenous sizing layers
- Fiber surface characterization

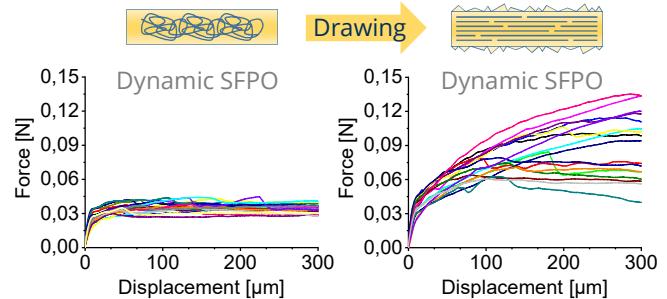


- Micromechanical testing – embedding and single-fiber pull-out (SFPO), Single-fiber tension test

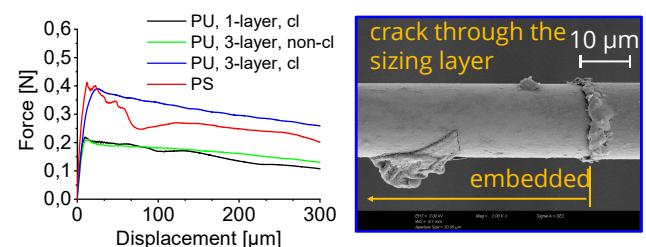
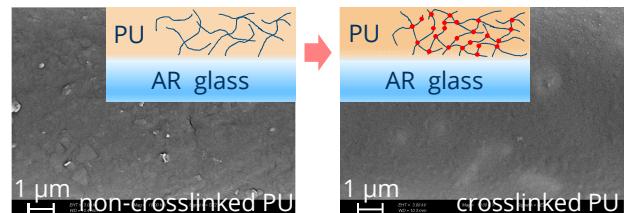


3 RESULTS

- New design strategies for tailored fiber modification
- PP fiber – improved energy absorption due to increased mechanical properties and surface roughness



- AR glass fiber – enhanced energy absorption due to an increased thickness and crosslinking (cl) of the sizing



4 COLLABORATIONS

- D. Vo (A1/I): PP short fiber production
- T. GONG (A3/I) and I. CUROSU (Postdoc): comparison micro- and macro testing of PP fiber composites
- A. SHEHNI (B2/I) and A. FUCHS (B3/I): modelling of the single-fiber pull-out

