

Arbeitsgruppe /Group	Glass
Betreuer/ Supervisor	Prof. Dr. Dominique de Ligny
Kontakt / Contact	Dr. Alexander Veber (alexander.veber@fau.de)
Sprache / Language	English
Art / Type	Masterarbeit
Dauer / Duration	MA-Arbeit 840 h in 6 Monaten
Thema / Topic	Brillouin spectroscopy mapping: developing a new experimental setup.
Einleitung / Introduction	<p>Brillouin spectroscopy by measuring the interaction between photons and acoustic phonons allow the determination of mechanical properties in situ inside matter.</p> <p>At the difference of the usual macroscopic testing involving long sample preparation and destructive experiment, here the mechanical properties can be obtained under a microscope. It is then theoretically possible to follow stress or strain in all space direction. If data acquisition is synchronized with the sample displacement then stress/strain 3D map could be realized.</p> <p>Such a tool will be very useful to follow at the micron scale for example residual stress or stress distribution around defects (grains, crack type....)</p>
Durchzuführende Arbeiten/Deliverables	<p>The student will receive first an intensive training about Brillouin spectroscopy and the use of laser sources.</p> <p>One goal will be the development of a software to acquire experimental data in link with sample positioning.</p> <p>The technic will be tested on macro-indentations realized on glass samples. That will give a totally new insight on crack tip propagation in glass which is essential to prevent crack formations.</p>
Literatur / Literature	<p>Sonneville, C.; D. de Ligny; A. Mermet, B. Champagnon, C. Martinet, G.H. Henderson, T. Deschamps, J. Margueritat, E. Barthel. In situ Brillouin study of sodium aluminosilicate glasses under pressure. Journal of Chemical Physics, 139, 074501, 2013.</p> <p>Sonneville C., S. Degioanni, C. Martinet, D. de Ligny, V. Martinez, A.-M. Jurdyc, A. Braunn, L. Raffaelli B. Champagnon, D. Vouagner. Pressure-independent Brillouin Fiber Optic Sensors for temperature measurements. Journal of Non-Crystalline Solids 401, 36–39, 2014</p>
Beginn / Start	March-April 2016