

ACOUSTICS2008/3000 Looking for shear waves in glass forming liquids

Thomas Pezeril^a, Christoph Klieber^a, Stephane Andrieu^b and Keith Nelson^a

^aMassachusetts Institute of Technology, 77 Mass. Avenue, room 6-026, Cambridge, MA 02215, USA

^bLaboratoire de Physique des Matériaux UMR7556, Université H. Poincaré / Nancy I, 54506 Vandoeuvre,
France

The ability of the generation of picosecond shear acoustic pulses in solids using ultrashort optical pulses have been employed to look for high frequency shear waves in glass forming liquids. As a transducer we used a canted iron thin film deposited on a glass substrate. The strong shear efficiency of generation provided by this kind of samples allowed the study of several glass forming liquids. As a first try, we have detected shear brillouin scattering in m-toludine at 100K, that is below the glass transition temperature, at a frequency of 9 GHz. Then, we observed shear waves propagating at room temperature in glycerol at frequencies below 50 GHz.