Two Experimental Devices for Measurement of Mechanocaloric Effects in Elastomers

We describe two devices for measurement of mechanocaloric effects in elastomers. One utilizes a motor-driven slider to stretch the sample. This enables the sample to be stretched to a precise length at a controlled time rate while its temperature is recorded. The other measures the mechanocaloric response of an elastomer as it is strained by a shearing force. Results of the measurement are presented as plots *vs*. time of the temperature of the sample and the force that has effected the deformation.

(by H. Suzuki & T. Matsuo)

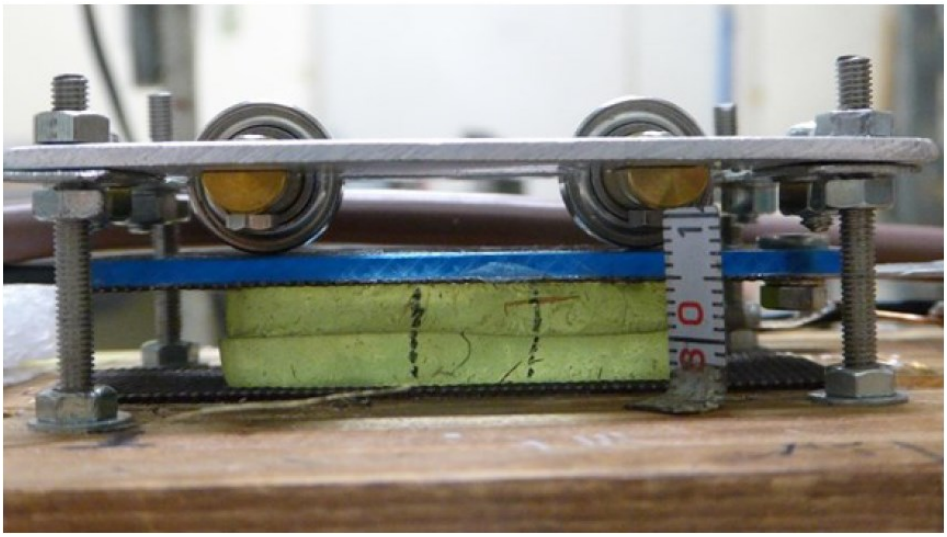

Photo 1. A styrene-based elastomer sample set on the shearing apparatus.

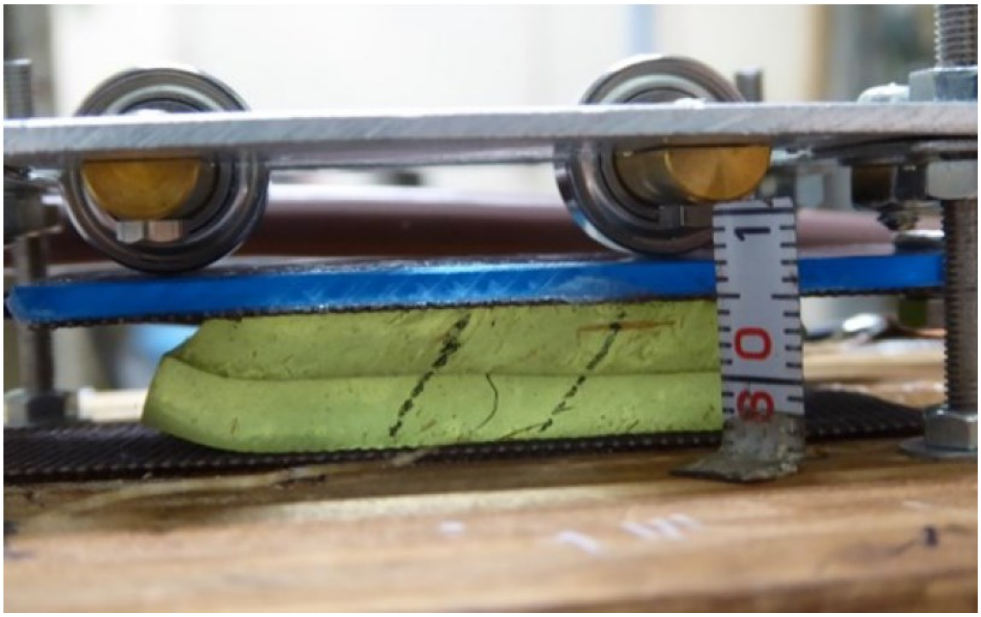

Photo 2. The same as in Photo 1 but shear-stressed to a limiting extent.

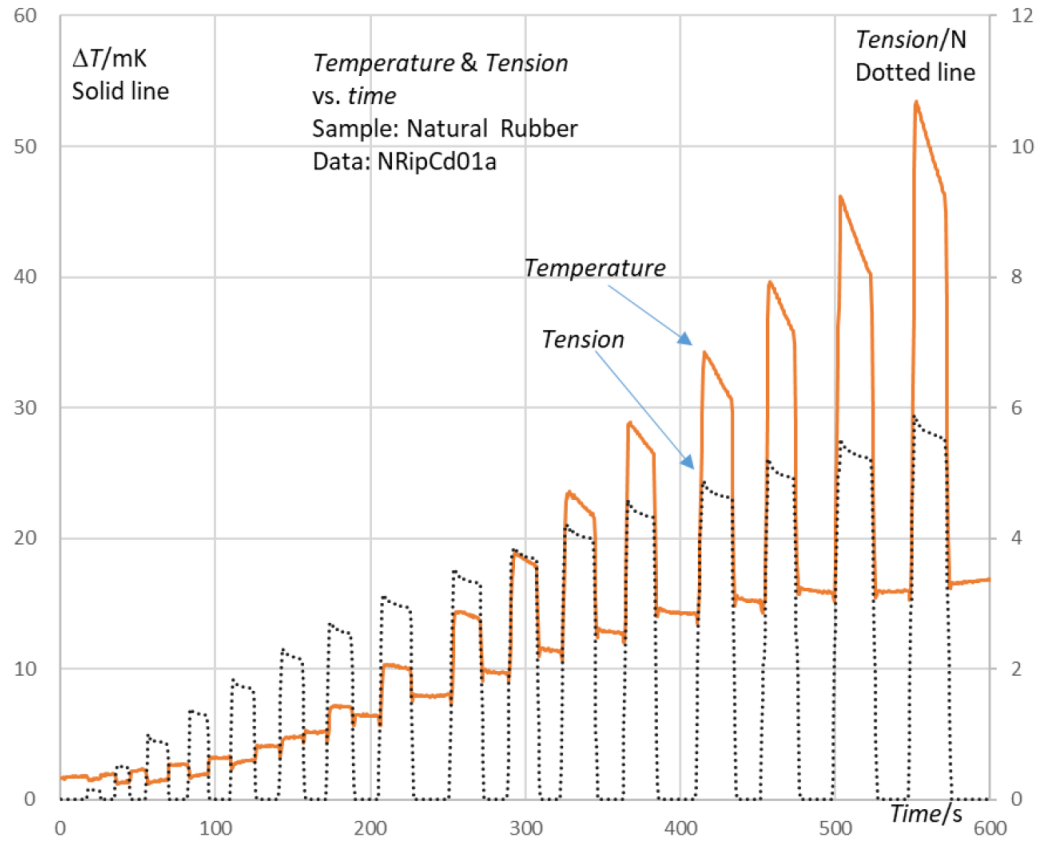

Fig. 1. The temperature and the tensile force on a natural rubber sample against the time recorded while it was stretched and allowed to retract repeatedly.

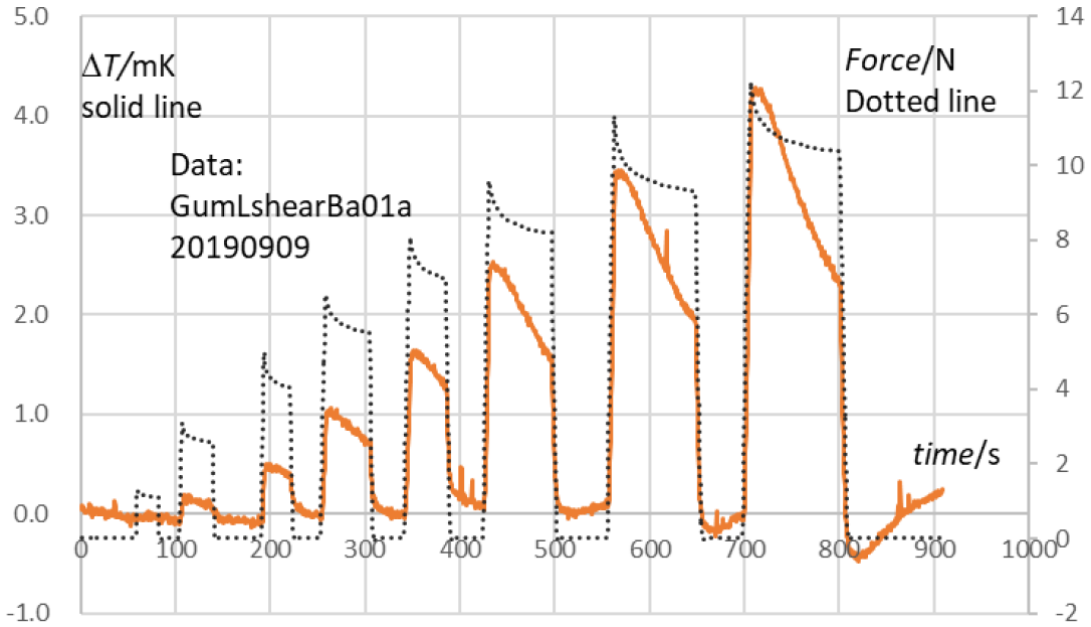

Fig. 2. The temperature and the shear stress on a styrene-based synthetic elastomer undergoing repeated shear deformation.