Measurements of Mechanocaloric Effects and Heat of Deformation of Plastics

We have shown, by direct measurement, that the surface temperature of a sheet of plastic PET increases on the inner (compressed) side when it is bent and decreases on the outer (extended) side. The change is reversible for small and intermediate deformations and irreversible for a large deformation where the material buckles.

(T. Matsuo, Y. Terashima & H. Yoshida)

Photo 1. The hinge-shaped sample holder, ca. 30 mm high.

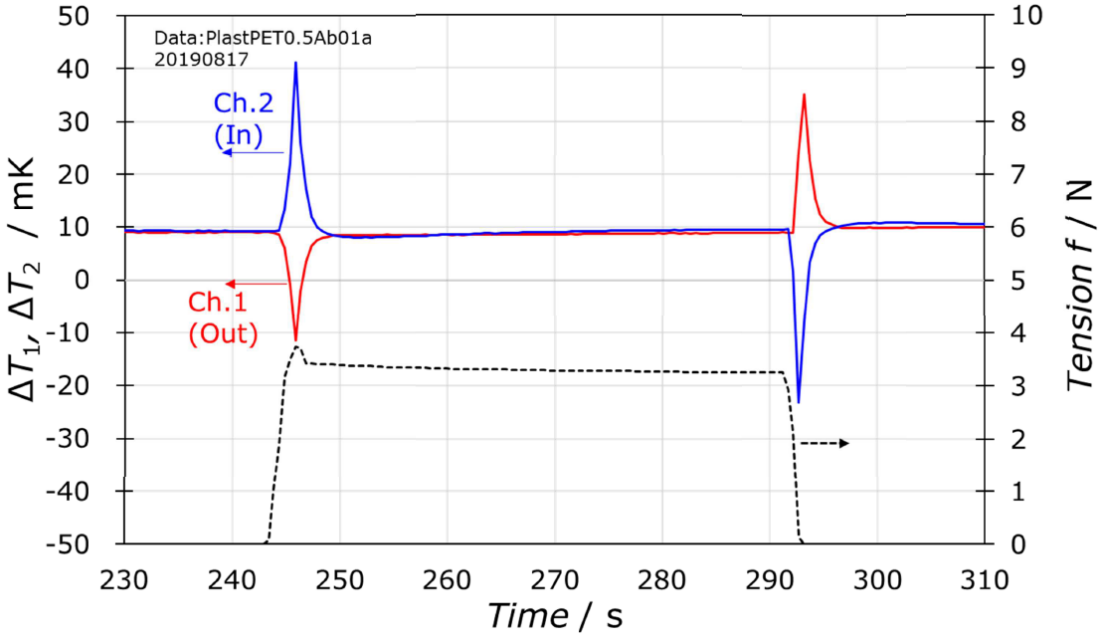

Fig. 1. Output signals from the inner (ch. 2) and outer (ch. 1) thermocouples and the force gauge (dotted line) vs. time. Small deformation.

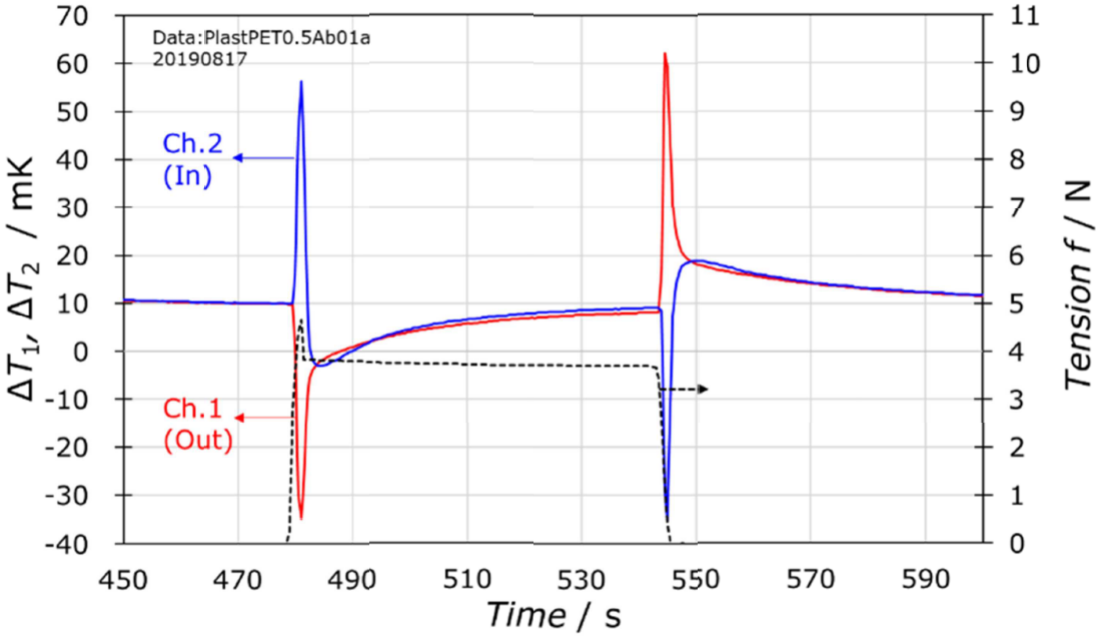

Fig. 2. The same as in Fig. 1. Intermediate deformation.

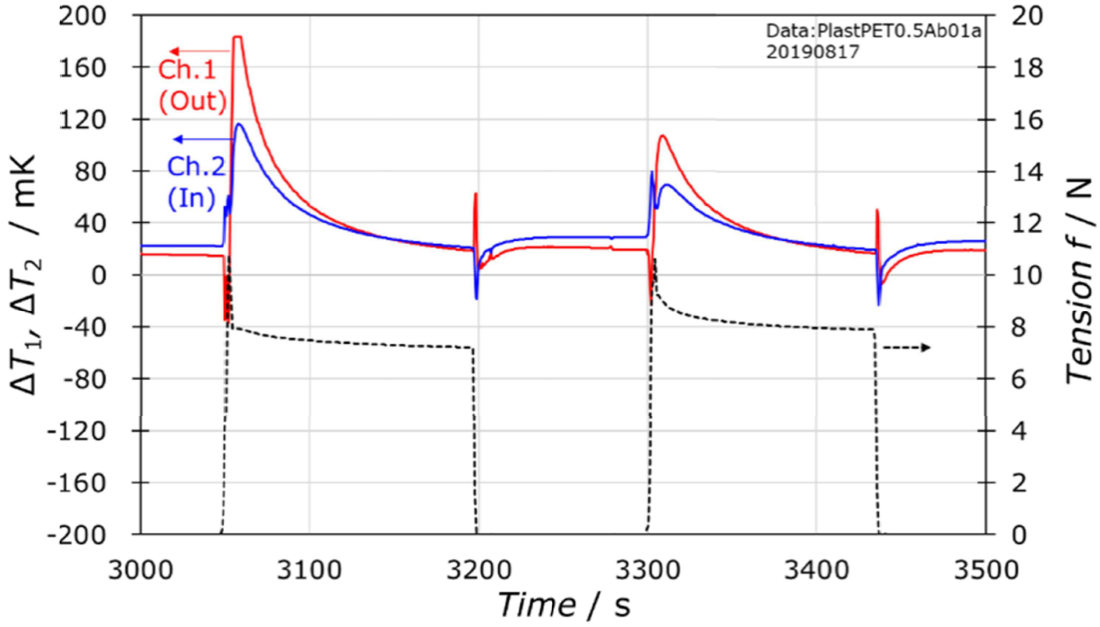

Fig. 3. The same as in Fig. 1. Large deformation.