

The deformation mechanisms of commercially pure magnesium using advanced in-situ methods were investigated in the present work. Compression and tensile test were done at room temperature. Simultaneously, the neutron diffraction was measured and the acoustic emission was recorded. The microstructure of the deformed material was also studied by means of optical microscopy and electron back-scattered diffraction. These measurements provided information about twin nucleation and growth, microstructure changes and the influence of the orientation of grains on the number of twins and their shape. The values obtained were compared to the Elasto-Plastic Self-Consistent model, which provides information about the activity of deformation mechanisms. We focused on clarifying the influence of twinning activity on asymmetry between tensile and compression deformation.