

**ACTIVITY 2: PLASTIC DEFORMATION**

*AIM: Investigate how materials can be permanently deformed*

1. Measure the width of a new sample (1 – 3) and place it in the tensile testing machine.
2. Increase the strain with a number of increments, recording all data at each step. Go beyond the onset of plastic deformation but not as far as the UTS.
3. Reduce the applied load to zero by reducing the strain (again, in steps and recording all data). Observe what has happened to the strain. What does this represent and why does it occur?
4. Calculate the engineering stress and strain (Advanced question: also calculate true stress and strain).
5. (Advanced question) Plot true stress vs true strain and estimate the work done in creating the permanent deformation.