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Comprehensive study on deformation of metal samples based on measurements of temperature, in-plane displacement and stress-strain characteristics JOHN GAFFNEY, CHRISTOPHER SCHNEIDER, SANICHIRO YOSHIDA, Southeastern Louisiana University — We have studied the dynamics of deformation of metal samples. Our efforts are directed at finding some correlation between the stage of deformation (elastic, plastic, pre-fracturing stage, etc) and changes in properties of the sample such as the change in temperature across the surface, the stress strain characteristics, and the in-plain displacement on the sample surface. To study this, we simultaneously applied three independent data collection systems; a tensile machine to obtain the stress strain curve, an optical interferometer to study both the vertical and horizontal displacement of the surface, and two thermistors to obtain a continuous temperature reading as the sample deformed. With two thermistors, we were able to study how the temperature changed in different locations on the surface of the sample.

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