Reply to "Digital Recording and Automatic Computation of Film Tensile Stress-Strain Data"

In this paper,[1] strain measurements were derived from crosshead travel data. This was indicated in the section which described the strain instrumentation as "the strain encoder [which] supplies electrical pulses per inch of crosshead travel."

I should like to point out that in ASTM methods on tensile properties of plastics[2] and of films[3] it is suggested that strain be measured within the gauge length of the test specimen. In a brochure published by a well-known instrument manufacturer[4] it is reiterated: "To correctly evaluate materials according to Hooke's law, strain should be measured in inches per inch and not be determined from assumed or calculated distances between the jaws of the testing machine. Testing machines have been built in which strain is calculated on the basis of crosshead motion per unit of time. However, curves produced in this manner contain many inaccuracies and variables. . . ."

I suggest, therefore, that strain measurements derived from a counterbalanced extensometer, mounted directly on the elongating section of the test specimen, replace crosshead travel measurements. The electrical signal from the extensometer would then transmit actual strain data from within the gauge length of the specimen.

References

1. Patterson, G. D., Jr., and T. D. Mecca, *J. Appl. Polymer Sci.*, **5**, 527 (1961): p. 528, §1, "Tensile Tester."

2. *ASTM D638-60T*, Fig. 1.

3. *ASTM D882-56T*, definitions 2, (c) and (d).

4. *Tinius Talks*, Vol. 9, No. 1, Tinius Olsen Testing Machine Company.

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