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U N I V E R S I T Y O F A U C K L A N D

SCHOOL OF ENGINEERING

THE MECHANICAL PROPERTIES OF GLASSY POLY (METHYL METHACRYLATE)

A Thesis submitted as part of the requirements for the Degree of Ph.D. (Engineering)

J. B. Meikle M.E.

April, 1970

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praetera nisi erit minimum, parvissima quaque corpora constabunt ex partibus infinitis, quippe ubi dimidiae partis pars semper habebit dimidiam partem nec res praefiniet ulla. ergo rerum inter summam minimamque quid escit? nihil erit ut distet; nam quamvis funditus omnis summa sit infinita, tamen, parvissima quae sunt, ex infinitis constabunt partibus aeque. quod quoniam ratio reclamat uera negatque credere posse animum, victus fateare necesset esse ea quae nullis iam praedita partibus extent et minima constent natura.

Luctretius Carus Titus
De Rerum Natura
Book 1, line 615

The old adage should be stood on its head: of applied science it can reasonably be said "If a thing is worth doing, it is worth doing even badly....."

J. M. Ziman
the Rutherford Memorial Lecture
Royal Society of London, 1968

1. ABSTRACT

The mechanical properties of glassy poly (methyl methacrylate) have been examined by means of constant strain-rate tests at differing strain-rates and temperatures. Both fast-cooled and slow-cooled samples have been examined in order to determine the effect the rate of cooling has upon the mechanical properties. The β and α' relaxations were revealed in the experimental results. The difference in mechanical properties of fast- and slow-cooled samples could not be satisfactorily explained by the theory of Rusch.

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