Non-Isothermal Precipitation Hardening of AZ91 Magnesium Alloy
Anneliese Bals, Panthea Sepehrband
Department of Mechanical Engineering, Santa Clara University

Background
The high strength-to-weight ratio of magnesium alloys makes them an attractive candidate for increasing fuel efficiency.

Problem Statement
Application of Magnesium for structural applications is still limited due to its relatively poor mechanical properties.

Research Design
Heat Treatment

Natural Aging

Results
Microhardness Testing

Isothermal Aging at 200°C

Non-isothermal Aging

Although similar in value, it takes 33.3 hours for AZ91 to reach 221°C at 0.1°C/min, while it took AZ91 only 10 hours to reach its peak during isothermal aging at 200°C.

Kissinger Method for Activation Energy

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