Elastocaloric cooling has emerged as a promising alternative to vapor compression in recent years. Although the technology has the potential to be more efficient than current technologies, there are many technical challenges that must be overcome to realize devices with high performance and acceptable durability. We study the effects of surface finish and training techniques on dog bone shaped polycrystalline samples of NiTi. The fatigue life of several samples with four different surface finishes was measured and it was shown that a smooth surface, especially at the edges, greatly improved fatigue life. The effects of training both on the structure of the materials and the thermal response to an applied strain was studied. The load profile for the first few cycles was shown to change the thermal response to strain, the structure of the material at failure while the final structure of the material was weakly influenced by the surface finish.

General information
Publication status: Published
Organisations: Department of Energy Conversion and Storage, Electrofunctional materials, Department of Wind Energy, Materials science and characterization
Contributors: Engelbrecht, K., Tusek, J., Sanna, S., Eriksen, D., Mishin, O., Bahl, C., Pryds, N.
Number of pages: 6
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: A P L Materials
Volume: 4
Article number: 064110
ISSN (Print): 2166-532X
Ratings:
Scopus rating (2016): CiteScore 3.67 SJR 2.177 SNIP 1.205
Web of Science (2016): Impact factor 4.335
Web of Science (2016): Indexed yes
Original language: English
Keywords: Shape memory effect, Surface finishing, Stress strain relations, Materials modification, Testing procedures
Electronic versions:
Effects_of_surface_finish_and_mechanical_training_on_Ni_Ti_sheets_for_elastocaloric_cooling.pdf
DOIs:
10.1063/1.4955131

Bibliographical note
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Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review