Extension twin variant selection during uniaxial compression of a magnesium alloy - DTU Orbit (30/01/2019)

Extension twin variant selection during uniaxial compression of a magnesium alloy

Samples of the magnesium alloy AZ31 have been deformed by compression to strains of 5% and 10% and microstructural observations made to investigate the activation of specific \{1 0 1\} extension twin variants. The twinning has been analyzed on a grain-by-grain basis for more than 260 grains to determine both the number of extension twin variants in each grain, and the volume fraction of each. At 5% strain approx. 30% of the grains contain twins corresponding to variants with the third or lower ranked Schmid factor, with the fraction increasing to 40% after 10% compression. A grain size effect is also observed in that smaller grains are less likely to contain lower ranked twin variants. For both 5% and 10% compression no clear relationship exists between the volume fraction of each twin variant in a given grain population and the Schmid factor for the twin variant. A positive linear relationship can be defined, however, between the maximum twinning fraction that a twin variant can reach and its Schmid factor.

General information
State: Published
Organisations: Department of Wind Energy, Materials science and characterization, Tsinghua University, Chongqing University
Contributors: Pei, Y., Godfrey, A., Jiang, J., Zhang, Y., Liu, W., Liu, Q.
Pages: 138-145
Publication date: 2012
Peer-reviewed: Yes

Publication information
Volume: 550
ISSN (Print): 0921-5093
Ratings:
BFI (2019): BFI-level 2
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.76 SJR 1.694 SNIP 1.943
Web of Science (2017): Impact factor 3.414
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.39 SJR 1.669 SNIP 1.913
Web of Science (2016): Impact factor 3.094
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 3.01 SJR 1.742 SNIP 1.858
Web of Science (2015): Impact factor 2.647
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 3.32 SJR 2.235 SNIP 2.546
Web of Science (2014): Impact factor 2.567
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 2.86 SJR 1.868 SNIP 2.235
Web of Science (2013): Impact factor 2.409
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 2.5 SJR 1.744 SNIP 2.358
Web of Science (2012): Impact factor 2.108
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 2.59 SJR 1.74 SNIP 2.414