

Luders Bands of KCl Whiskers

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Lüders Bands of KCl Whiskers*

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Abstract

KCl whiskers (grown in $\langle 100 \rangle$ direction) thicker than about 70μ show logarithmic stress-strain curves, which are caused by the propagation of Lüders bands. The front velocity of a Lüders band is nearly constant for the constant tensile strain rate in spite of the remarkable increase of the flow stress during its propagation. The average strain in a Lüders band increases with its propagation. On the other hand, whiskers thinner than about 70μ show remarkable serrated yielding phenomena. It is shown that both the logarithmic stress-strain curve and the serrated yielding can be interpreted on the basis of experimental facts and on the cross-slip mechanism which may be caused by the stress field of screw dislocation alignments in Lüders bands.

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