

Deformation Mechanisms in Ti and Zr

Further Reading Suggestions

The videos in the lectures showing the movement of dislocations and slip are taken from the DoITPoMS site, which is a great resource covering a range of different topics in materials science. If you are still a bit unclear on visualising the movement of dislocations browsing this site will help, and it is often a go-to for understanding basic materials science concepts. The book by Tenckhoff is a bit old now, but it is only short, and gives a good summary of how slip and twinning contribute to texture development in single-phase Zr alloys. The book by Humphreys and Hatherly is another Bible for materials science students, but even just the Introduction is a good summary of the fundamentals of recrystallization and grain growth and worth a read. And finally, if you were intrigued about dynamic transformation, then please have a read of our recently published paper, to see the type of in-situ measurements we can make during hot-deformation, using high energy synchrotron X-rays.

- Website / Videos – DoITPoMS, Introduction to dislocations, <https://www.doitpoms.ac.uk/tlplib/dislocations/index.php>
- Book – E. Tenckhoff, Deformation Mechanisms, Texture, and Anisotropy in Zirconium and Zircaloy, 1988, First Edition.
- Book – Recrystallization and Related Annealing Phenomena by F.J Humphreys and M. Hatherly, 2004, Second Edition, *Chapter 1 Introduction, Chapter 2 The Deformed State, Chapter 6 Recovery After Deformation, Chapter 7 Recrystallization of Single-Phase Alloys.*
- Paper – Direct Evidence for Dynamic Phase Transformation during High Temperature Deformation in Ti-64, Christopher S. Daniel, Chi-Toan Nguyen, Michael D. Atkinson, João Quinta da Fonseca, MATEC Web Conf. 321 12037 (2020), <https://www.doi.org/10.1051/matecconf/202032112037>