Texture and Anisotroy

Syllabus

Dr.-Ing. Jui-Chao Kuo

Course Goals

- Descriptions of orientation
- Descriptions of texture
- Experimental analysis: XRD, EBSD
- Applications:

  -Deformation Textures in Metals (XRD)

  -Recrystallization Textures in Metals (XRD)

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Texture and Anisotroy

Part I. ***Fundamental issues***

1. Introduction
2. Descriptors of orientation
3. Application of diffraction to texture analysis

Part II. X-ray-based ***analysis***

4. Macrotexture measurements
5. Evaluation and representation of macro-texture data

Part III. Electron diffraction based ***analysis***

6. Kikuchi diffraction pattern
7. Scanning electron microscopy-based techniques
8. Transmission electron microscopy-based techniques
9. Evaluation and representation of micro-texture data

Grading and References

- Grading:

  I. Middle exam (50%):

  II. Final presentation (50%)

- References:

1. Olaf Engler and Valerie Randle, “Introduction to Texture analysis-macrotexture, microtexture & orientation mapping”, 2nd ed., CRC press 2010. (Textbook)
2. F.J. Humphreys and M. Hatherly, “Recrystallization and related annealing phenomena”, Elsevier 2004.
3. A.J. Schwartz, M. Kumar, B.L. Adams, D.P. Field, “Electron Backscatter Diffraction in Materials Science”, Springer-Verlag 2009.