

Multi-scale analysis by SEM, EBSD and X-ray diffraction of deformation textures of a copper wire drawn industrially

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Authors: Ayad R, Zouari W, Meftah K, Ben Zineb T, Benjeddou AZidani M, Messaoudi S, Dendouga F, Baudin T, Derfouf C, Boulagroun A, Mathon M.H.

Abstract

In this study, we tried to understand the texture evolution of deformation during the cold drawing of copper wire (99.26%) Drawn by the company ENICAB destined for electrical cabling and understand its link with the electrical conductivity. Characterisations performed show the appearance and texture development during the reduction of section of the wire. The texture is mainly composed of the fiber $\langle 111 \rangle // DN$ ($DN //$ drawing axis) (majority) and the fiber $\langle 001 \rangle // ND$ (minority) whose acuity increases with deformation level. The wire was performed for the main components of the texture, ie the fiber $\langle 100 \rangle$ and $\langle 111 \rangle$ conventionally present in these materials. We will pay particular attention on the energy of the cube component $\{100\} \langle 001 \rangle$ recrystallization that develops when the level of reduction is sufficient. There was also an increase in hardness and electrical resistivity along the applied deformation.

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