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Effect of short-time annealing on recrystallization and texture evolution in an electrical steel

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The study focuses on the study of the static recrystallization and texture evolution of an electrical steel annealed at three different temperatures for sub-minute soaking time. The objective is to determine the optimal time-temperature parameters that promote the development of favourable crystallographic textures for magnetic properties while minimizing annealing time. Microstructural evolution and texture formation were analysed using Optical (OM) and Scanning Electron Microscopy (SEM), and Electron Backscatter Diffraction (EBSD). Unlike conventional studies conducted in controlled atmospheres, this work investigates recrystallization in ambient air, providing insights into its feasibility for industrial-scale applications. The findings demonstrate the potential for achieving desirable textures through rapid annealing in non-controlled environments, providing a pathway for process optimization in electrical steel manufacturing.

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