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Effect of initial orientation on subgrain formation in nickel single crystals during equal channel angular pressing

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Highlights

- The EBSD measurements reveal that during the ECAP process the microstructure is modified and subgrains are developed.
- The experimental results show that the microstructure is characterized by low and high angle grain boundaries.
- The numerical results indicate that the rotation and the scattering of orientations are affected by the initial orientation of crystals under ECAP process.
- The misorientation between subgrains depends on the initial orientation and subgrains with both high and low angle grain boundaries have developed in the microstructure.
- The cube orientation is metastable and exhibits a heterogeneous deformation with a wide scattering of orientation.

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