

## **Texture Memory in Iron: Application to Earth inner core**

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The plastic properties of iron are critical for constraining the anisotropy of the Earth inner core. There are discussions in the literature whether phase transitions from an hexagonal to a cubic phase could occur in iron under the conditions of the Earth's core. Implications of such a transition on texture and anisotropy of iron polycrystalline aggregates are largely unknown. In this exploratory study, we submit a polycrystalline sample of iron to various transitions between the bcc, hcp, and fcc phases at pressure ranging between 0 and 30 GPa and temperatures ranging between 300 and 1000 K and follow the evolution of lattice preferred orientations induced by both deformation and phase transformation. This information is then used to better constrain and understand the transitions mechanisms between the 3 phases. Effect of stress geometry will be discussed as well.