A Theoretical Note on the Creep Deformation and Alternating Magnetic Field

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The alternating magnetic fields inside the crystal structure are counterbalanced each other because the crystallizing π -bondings are three-dimensional. At the disbonding for the plastic deformation, the alternating magnetic field revives there, produces π -far infrared ray and then induces new crystallizing π -bonding to the strain-hardening. The revived alternating magnetic field along the disbonding line (or conventional dislocation line) produces rotating electromagnetic wave (π -ray) and then absorbing force induces atom's diffusion (mass transport), which makes the disbonding line and grain boundaries moved at an elevated temperature. At high temperature and low stresses the atoms near the lines are reoriented due to the diffusion processes and the supplied π -rays. Some new cracks among the reoriented grains are produced and then lead to the creep fractures under a small elongation. And therefore creep rupture and creep rate are controlled by temperature and creep load. The test can be accelerated by elevating temperature (or increasing diffusion rate due to high absorbing force).