MS41-P01 | WATCHING NANODEFECTS GROW IN SI CRYSTALS

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Thickness-dependent Pendellösung oscillations as described by the dynamical theory of X-ray diffraction are extremely sensitive to strain fields from defects in a host crystal. Based on this, we initiated a novel approach to study nucleation and growth of oxygen precipitates in moderately (≈ 10^{15} $1/cm^3$) and highly (≈ 10^{18} $1/cm^3$) boron doped Czochralski Si crystals in-situ up to 1000°C. This provides a unique access to monitor continuously the evolution of defects from their very early stages to the long time behavior. The data is interpreted within a diffusion-limited model of growing spherical precipitates with two growth regimes, where an initial diffusion driven mode is followed by a long time precipitation behavior, interpreted as Ostwald ripening.