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Lab-based correlative X-ray imaging to study core formation and its impact on lattice uniformity in (Mg,Zr):SrGa₁₂O₁₉ single crystals

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(Mg,Zr):SrGa₁₂O₁₉ (SGMZ) single crystals are analyzed by lab-based X-ray imaging techniques to study the interplay of compositional variations and local stress. Based on quantitative rocking curve imaging, we can disentangle lattice strain due to stress and composition changes. We found that the formation of a small (0001) facet at the center of the growth interface leads to reduced dopant concentration which then causes elastic strain as it is also seen in birefringence measurements.

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