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Development of Through-Thickness Texture Gradient and Persistence of Shear-Type Textures during Annealing of Commercial Purity Aluminium Sheet Processed by Accumulative Roll-Bonding

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Ultrafine-grained commercial-purity aluminum (AA1070) sheets produced by four cycles of accumulative roll-bonding (ARB) without lubrication are subjected to annealing treatments in the temperature range from 250 °C to 400 °C. Microstructures and microtextures in the surface and center regions of the ARBed and annealed sheets are measured by electron backscatter diffraction. The results show that annealing treatments at 325 °C or above lead to a reduction in the microstructure gradient but a significant through-thickness texture gradient different from that in the as-deformed state. The center region is featured by the development of a strong cube texture at the expense of rolling components. In the surface region, shear-type components are either enhanced or largely retained, showing a high persistency upon annealing. While the grain

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