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**Development of vertical Bridgman technique for 6-inch diameter *c*-axis sapphire growth
supported by numerical simulation**

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Abstract

Based on the growth of 3-inch diameter *c*-axis sapphire using the vertical Bridgman (VB) technique, numerical simulations were made and used to guide the growth of a 6-inch diameter sapphire. A 2D model of the VB hot-zone was constructed, the seeding interface shape of the 3-inch diameter sapphire as revealed by green laser scattering was estimated numerically, and the temperature distributions of two VB hot-zone models designed for 6-inch diameter sapphire growth were numerically simulated to achieve the optimal growth of large crystals. The hot-zone model with one heater was selected and prepared, and 6-inch diameter

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