

## CRYSTALMASTER

Our Group 7000 Crystal Growing System provides the user with the two most important parameters necessary for critical crystal growth: stability and control. Both are necessary to assure consistency, repeatability, and uniformity—the keys to successful crystal growth in the laboratory and in production.

Stability provides the researcher and developer with a known and constant environment for demanding crystal growth. Stability assures uniform, tightly defined temperatures and thermal gradients for consistent melts and zone refining. Stability requires well-controlled gaseous or vacuum environments. Stability in crystal growth demands smooth, highly constant, judder-free motions with large dynamic ranges, programmable first and second derivatives, and multi-axis configuration.

Yet all must be controllable. The computer system interface must assure that temperatures are held precisely where they are set and change quickly and smoothly to their new values with minimum overshoot. The motion system must provide pull rates that are highly consistent in both time and space—from moment to moment and from week to week. Positional accuracy must be maintained throughout the complete draw cycle to assure consistent and repeatable results.

Whether Czochralski, Bridgman or top-seeded solution methods are being used Group 7000 Crystal Growing Systems from Thermal Technology Inc. provide you with a complete, integrated, designed-for-success marriage of the finest, most advanced methods in crystal growing technology with the field proven performance of Astro laboratory furnaces and controls.



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A partial list of crystals which have been successfully grown with the Group 7000 System includes:

**Czochralski Technique** • Barium sodium niobate • Bismuth germanium oxide • Calcium molybdate • Lithium fluoride • Lithium germanium oxide • Lithium niobate • Magnesium fluoride • Potassium chloride • Strontium barium niobate • YAG • Sapphire • Silicon

**Bridgman Technique** • Cadmium fluoride • Cadmium telluride • Gallium arsenide • Magnesium fluoride • Silver gallium selenide • Silver gallium sulfide

**Top-Seeded Solution Technique** • Beta barium borate • Lithium borate • Potassium titanium phosphide