



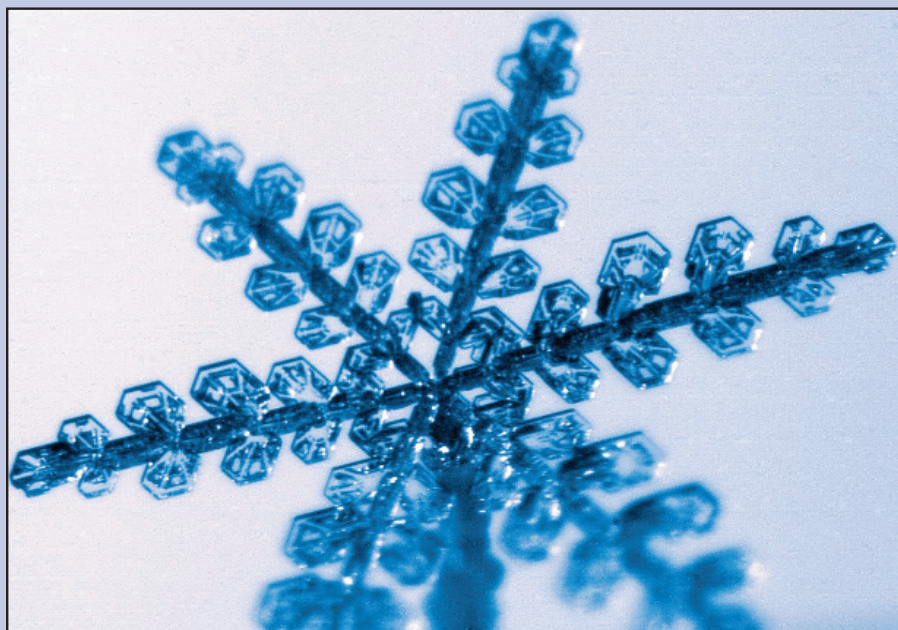
# Creating Crystals

Both the power of mathematics and the speed of today's computers are needed in the study of crystal formation. In addition to the aesthetically appealing possibility of understanding snowflakes, the field of crystal formation is crucial to the integrity of steel, superconductors, and computer chips.

While crystals are forming, they have moving, irregularly shaped boundaries, which makes only numerical solutions to their equations possible. Part of crystal formation follows the principle of a minimum surface area for a fixed volume, but the orientation of a crystal also affects its formation: Heat is diffused more easily away from the surface than into it, so crystals in the direction of the exterior form faster than others. The extra complexity that orientation brings to the problem of crystal formation makes solving the relevant equations more difficult.

**For More Information:**

*What's Happening in the Mathematical Sciences*, Vol. 1, Barry Cipra.



Photograph courtesy of snowcrystals.net.



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