

## Obituary - Fred Schmid



Frederick Schmid, co-inventor of the heat exchanger method (HEM) of crystal growth and founder of Crystal Systems, Inc. of Salem, Mass., passed away peacefully on October 31, 2025, surrounded by his family.

Fred was born on June 2, 1936, outside Cooperstown, N.Y. As a first-generation German immigrant, he worked on the family dairy farm and learned English by attending the local elementary school during World War II. Fred's persistence under adverse conditions as well as his resourcefulness and hands-on skills learned on the farm were traits that he demonstrated for the rest of his life.

His educational interests led him away from the farm and he graduated from Lafayette College with a bachelor's degree in mechanical engineering and earned his master's degree in mechanical engineering with an option in materials at Northeastern University. Shortly after graduating he was working at the Army Materials and Mechanics Research Center, Watertown, Mass., with Dennis Viechnicki on directionally solidifying  $\text{Al}_2\text{O}_3$  from the melt to make a transparent ceramic armor. During one experiment, in November 1968, he noted the few and unusually large grains resulting. Fred further experimented with the process to develop the HEM method for single crystal growth. Fred left the Army and founded Crystal Systems Inc. in 1971 to commercialize the HEM growth of sapphire.

Fred managed the company until 2010. During those years, Fred demonstrated skills as an entrepreneur as well as an innovator and successfully developed Crystal Systems Inc. into a thriving business. Developments include inventing the fixed abrasive slicing technology (FAST) process for slicing silicon and sapphire; expanding the use of HEM to grow multicrystalline silicon; growing the world's largest Ti-doped Sapphire for ultra-high power lasers; and scaling the sapphire crystal growth to boules of greater than 635 mm and over 270 kg. During this time Fred also proved himself to be a generous and decisive manager who inspired loyalty and admiration in his employees. Fred sold Crystal Systems to GT Advanced Technologies in 2010 and served as an advisor to GT for several years after the sale.

However, Fred's desire to continue innovating led him to found a new company: Crystal Systems Innovations Inc., focused on further developing HEM crystal growth and the FAST slicing technology. Fred thoroughly enjoyed working with the employees of his company until shortly before his passing.

Fred had many passions beyond work, he was an avid sailor and raced in the Marblehead Rhodes 19 fleet, (winning the East Coast Championships, with his wife, Judy), as well as in the PHRF fleet, where he was known as a fierce competitor who loved to recount the races over a beer with his crew and fellow racers. Fred was an avid tennis player, skier, and gardener, who could be found outdoors enjoying nature during his free time. Fred took great delight in having his whole family around to enjoy time together. As he would always say to people when saying goodbye to them, "Have fun, but not too much" with a big smile.

Fred leaves behind his wife of 63 years, Judith Atkinson Schmid; his sons, Keil Schmid and Kurt Schmid; his daughter-in-law, Margarita Schmid; and grandkids, Max Schmid, Kaia Schmid, and Timo Schmid. In lieu of flowers, please donate to the Plummer House, via Plummer Youth Promise | Helping Foster Children, 37 Winter Island Road, Salem, MA 01970-5715. A celebration of Fred's life will be held in the spring.

Submitted by David Joyce

November 19, 2025