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Memorial of Alvin Jerome Cohen 1918–1991

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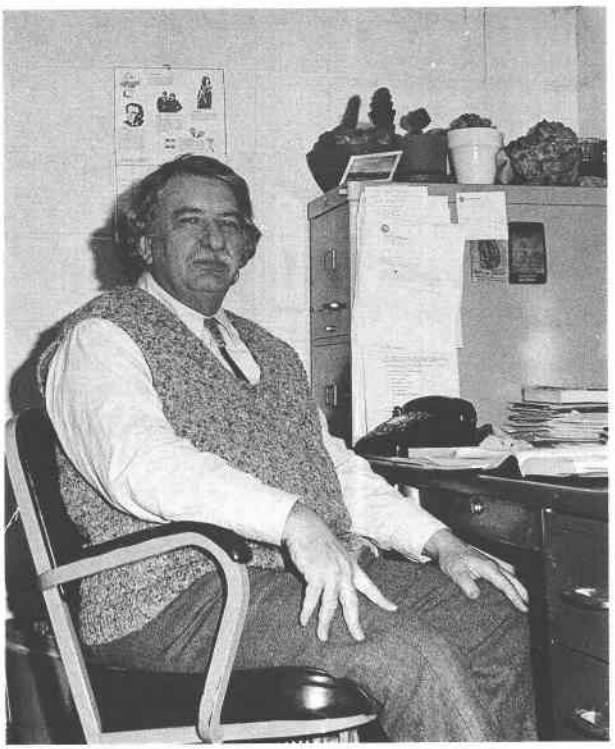
Alvin Jerome Cohen, a Fellow of the Mineralogical Society of America, was born on July 21, 1918, in Louisville, Kentucky, and died on October 2, 1991, in Pittsburgh, Pennsylvania.

I have known Alvin Cohen since I was a graduate student in the (then) Department of Geophysics and Geochemistry at the Pennsylvania State University in 1957. Having heard that I had accumulated a relatively large collection of tektites from Australia, he appeared at my desk one day and asked to examine them. At that time, Alvin's published papers consisted of an early group on inorganic chemistry and a later group on impurities, defects, and color centers in quartz, with one paper on fused silica. He had been doing applied research on glass, however, and was about to become head of the Plate Glass Research Project at the Mellon Institute. He and Truman Kohman recently had become interested in tektites, as natural glasses of unknown origin, and I agreed to let him borrow the collection for a while so that they could study them. I have no idea whether this event had any influence on Alvin's subsequent research, but in 1958 he published his first paper on tektites; it was followed over the next six years by ten more. He was working alone for the most part: he was sole author of ten of his eleven papers on tektites; the only exception was the one paper with Arch Reid and Fred Park, who were his graduate students at the time. While I was still struggling, trying to fit tektites into some model involving their origin as meteorites, Alvin decided that tektites were terrestrial impact glasses, and that turned out to be the conclusion favored by most tektite enthusiasts today, including me.

Thinking about tektites as products of great impacts apparently led Alvin to a consideration of asteroidal impact sites, and his publication list soon tilted toward papers on impactites, shocked minerals and rocks, and ancient impact scars. Notable in this connection was his identification of coesite as a shock product associated with a number of such features. This interest extended in a natural manner to samples of the lunar regolith, with its high concentration of shocked materials; his publication record turned another corner.

I have described Alvin's changing scientific enthusiasms during the period that I knew him, but there were two constants also. He maintained a lifelong interest in color centers, mainly in quartz but in other minerals as well, and most of his later papers, often written with one or more of his students, were concerned with such studies. He derived much intellectual pleasure from his development over a period of years of an understanding of the causal mechanisms of smoky and amethyst quartz and the interesting relationship between them. He found that if Al^{3+} occurs in the tetrahedral site, it produces smoky quartz—except when interstitial Fe^{3+} is present in greater concentration than $^{[4]}Al^{3+}$. Under those circumstances, irradiation of clear quartz produces smoky quartz at first, but further irradiation further ionizes the Fe and causes charge transfer between Fe^{4+} and a trapped hole on an O atom of an Al^{3+} tetrahedron. This mechanism produces the beautiful purple color of amethyst.



Unexpectedly for a lab-oriented researcher, he loved field work and seized every opportunity to accompany field excursions or organize his own. He visited Chubb Crater in the Canadian Arctic and collected tektites in what was then Czechoslovakia. He collected minerals in the Great Lakes region and in Scandinavia, among many other sites on the surface of the globe. Somehow, too, he found the time to build a fine collection of Inuit stone carvings and to become an expert on Japanese prints and German wines.

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Alvin's love of the scientific endeavor and his discovery of fun in such pursuits found expression in the title of one of his last oral presentations, delivered on February 15, 1987, during a symposium on quartz before the Tucson Gem and Mineral Society. The title is "In Throes of Death Stately Cairngorm Brings forth Bacchanalian Amethyst." I have not yet seen it in print; however, his bibliography notes that the ten-page abstract, revised, has been accepted for publication in the *Mineralogical Record,* but under a new title, unfortunately.

Listed below is the impersonal record of Alvin's professional life—the duties, the career milestones, the professional societies, the honors—in short, the "talus," as old Campbell-Smith used to call it.

Alvin received his B.S. in chemistry in 1940 at the University of Florida and his Ph.D. in inorganic chemistry in 1949 at the University of Illinois, with minors in mineralogy and analytical chemistry. He did postdoctoral research in inorganic chemistry at the University of Illinois during the summer of 1949 and in structural inorganic chemistry at the California Institute of Technology, with Linus Pauling and Norman Davidson, in 1949 and 1950.

During the Second World War, he worked as an analytical chemist at TVA and as a physicist on bomb ballistics at the Indiana Ordnance Works. He served as a naval officer on active duty from 1943 to 1946, attaining the rank of Lieutenant Commander. He commanded several craft in the Atlantic and Mediterranean theaters.

At the Mellon Institute as a Fellow from 1953 to 1957 and as a Senior Fellow from 1958 to 1963, he worked in inorganic and solid-state physics and headed a plate-glass research group and a geochemical research group. In 1963 he came to what is now the Department of Geology and Planetary Science of the University of Pittsburgh as Professor of Geochemistry with tenure. He retired to emeritus status on August 1, 1988, and remained active in department activities and duties until his death. He had been a Visiting Professor at the Department of Earth and Planetary Sciences, University of California, San Diego; he was at La Jolla on an AEC postdoctoral fellowship, and he served as a Distinguished Visiting Professor at the American University in Cairo, Egypt.

He was a member of the Mineralogical Society of America (Life Fellow), the Mineralogical Society of Great Britain and Ireland, the Meteoritical Society (Fellow), the Geochemical Society, the International Association of Geochemistry and Cosmochemistry, and the American Association for the Advancement of Science (Fellow).

As an alumnus of the University of Florida, he served as a Board of Control Graduate Scholar. He was a member and Allegheny Chapter President (1955–1957) of the Society for Pennsylvania Archaeology; from 1959 he had been a Research Associate in Geology and Mineralogy at the Carnegie Museum of Natural History, and he was a member of the American-Scandinavian Foundation (now the Scandinavian Society of Western Pennsylvania), serving as Vice-President of the Pittsburgh Chapter from 1978 to 1979, as President from 1979 to 1981, and as a board member until his death. At Mellon Institute he had developed a light-sensitive plate glass, for which he received the IR100 Award for one of the 100 most significant technical products of 1963, and at the University of Pittsburgh he received NASA research grants as Coinvestigator and Principal Investigator on lunar samples.

Alvin had three children, Amanda, Jessie, and David, with his first wife, Lois, and one child, Aina, with his second wife, Seija. Although proud of all his children, he was particularly gratified that Aina shared his fascination with chemistry and seems to be following in his footsteps.

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