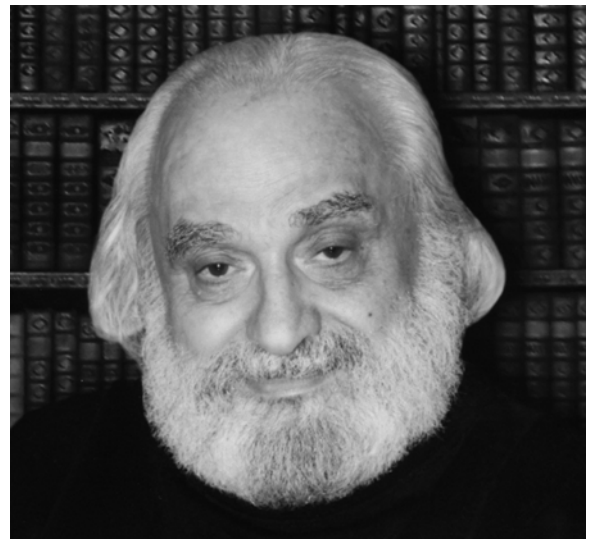
Clays and Clay Minerals, Vol. 59, No. 1, 1, 2011.

In Memory of Armin Weiss (1927–2010)



Armin Weiss (correctly "Weiß") was born in Stefling (a small village near Regensburg, Bavaria, Germany) on November 5, 1927, as the youngest son of two elementary school teachers. After being a 'Luftwaffenhelfer' from December 5, 1944, until the end of the Second World War, he returned to Bavaria on July 5, 1945. He worked in a pharmacy until October 1945, after which he studied pharmacy (1947 'Vorexamen' in pharmacy) and chemistry (1947–1951) at the University of Regensburg and the Technical University of Darmstadt (1951 diploma examination). Two years later, he completed the thesis (Technical University, Darmstadt, Prof. Dr. Ulrich Hofmann) on 'Reaktionen im Inneren von Schichtkristallen' ('Reactions in the interlayer space of layered compounds'). In 1955, he passed the 'Habilitation' (Technical University of Darmstadt) with the thesis 'Cyanide der Übergangselemente' ('Cyanides of the transition elements'). From 1961 to 1965 he was Professor ('Extraordinarius') of inorganic chemistry at the University of Heidelberg, and was then appointed as Professor ('Ordinarius') of inorganic chemistry at the University of Munich and held this position from 1965 to 1996.

Armin Weiss published many studies on the structure and properties of chalcogenides, silicides, germanides, cyanides, mercury compounds, and thiosalts. He reported the preparation and crystal-structure determination of a new modification of silicon dioxide consisting of infinite chains of SiO_4 tetrahedra sharing opposite edges.

About 120 publications (a third of his publications[1]) are related to the properties, reactions, and applications of clay minerals. His first publication (1951) was on 'Batavit,' a vermiculite-like mineral. As a student in Ulrich Hofmann's group, he acquired a long-lasting interest in the study of clay minerals. He described fibrous vermiculite, wolchonskoite, and saponite. His main interest lay in the study of the ion exchange properties and the interlamellar reactions of the clay minerals, in particular in relation to organic compounds. In parallel with the studies of 2:1 clay minerals, he investigated the interlamellar reactions of various layer compounds such as titanates, phosphates, vanadates, uranium micas, graphite oxide, iron oxychloride, and earth alkali quadrates. He also described the two-dimensional swelling of many chain-like compounds

[1] This bibliography is a modified version of two articles:
Beneke, K., Lagaly, G., and Schön, G. (1998) Thomas Graham Prize 1997 awarded to Armin Weiss. *Progress in Colloid and Polymer Science*, **111**, 6–8; and
Beneke, K. and Lagaly, G. (2002) Armin Weiss on the occasion of his 75th birthday. *ECGA (European Clay Group Association) Newsletter*, **5**, 27–53, also showing a complete list of his publications, see http://www.uni-kiel.de/anorg/lagaly/group/klausSchiver/Weiss.pdf

DOI: 10.1346/CCMN.2011.0590101

such as polyphosphates, polyvanadates, mercury amidosulfonates, alginic acid, pectic acid, and deoxyribonucleic acid.

A milestone (1961) was the observation of the intercalation of kaolinite with urea. The idea behind these experiments was that the hydrogen bonds between the kaolinite layers could be opened by molecules such as urea which are known to break hydrogen bonds. A few years later, Prof. Weiss observed the intercalation of organic molecules into titanium disulfide and initiated a new field of research. Numerous intercalation compounds were first described by Prof. Weiss and coworkers. Since then, the number of new intercalation compounds has increased rapidly, and intercalation chemistry and physics is now an important field of research in solid-state science.

Professor Weiss studied catalytic reactions of clay minerals and the role of clay minerals during the formation of petroleum. For some time, he was engaged in discussions about the role of clay minerals in the origin of life.

His contributions on the alteration of clay minerals by phosphate and the formation of layered aluminophosphates such as taranakite are often ignored but should be considered when clay minerals are reacted with phosphates or in relation to the use of clay minerals in barriers.

A fascinating aspect of his research was the study of silicosis. He analyzed solid materials enriched in human lungs and isolated a swelling, toxic iron phosphate silicate growing within the air cells and finally destroying them.

Armin Weiss was always interested in complex chemistry and published several papers on silicon complexes with octahedral coordination. He described the modification of the clay mineral surfaces with binuclear iron complexes as simple enzyme models.

He discovered many new fields of interest. He initiated solid-state chemistry at high temperature and high pressure. Significant developments in colloid science resulted from his studies on thixotropic clay-mineral dispersions. The current understanding of ceramic processes is based on the principles of colloid chemistry of clay minerals established by Ulrich Hofmann and Armin Weiss.

From 1966 to 1996 Prof. Weiss was one of two editors of *Colloid and Polymer Science* and *Progress in Colloid and Polymer Science*, and during this period he published some outstanding contributions in colloid and interface science.

Professor Weiss served as President of the Kolloid-Gesellschaft for 20 years (1967–1987), almost as long as Wolfgang Ostwald who founded the Kolloid-Gesellschaft in 1922 and was its President from then until 1943. Armin Weiss was a key figure in gaining an international reputation for this organization – his work being recognized worldwide. From 1979 to 1983, Weiss was Vice-President of the International Association of Colloid and Surface Scientists and in 1998 he received the Thomas Graham Prize of the Kolloid-Gesellschaft for exceptional merits in colloid science, for encouragement of international cooperation in colloid science, and advancements in interdisciplinary research. Because of serious illness, this was the last time he was able to participate in a conference.

From 1978 to 1982 he served as Vice-President of the Association International pour l'Étude des Argiles (AIPEA). In 1981, he received the Liebig Award of the GDCh (Gesellschaft Deutscher Chemiker) and, in 1985, was honored with the Dr. h. c. of the Lorand-Eőtvős University of Budapest.

Professor Weiss was always engaged fully with any area of science with which he came into contact, and, in particular, was always open to discussions on environmental problems. He believed that scientists are responsible to society and must provide their knowledge for the benefit of all people. In this sense, he was heavily involved in the anti-nuclear movement. From 1986 to 1990 he acted as a member of the Green Party in the Parliament of Bavaria. His contributions were instrumental in the shutdown of the nuclear-waste reprocessing plant in Wackersdorf. In 2007 Weiss received the 'Nuclear-Free Future' Award for his selfless activism in risking his academic career to help force the curtailment of Wackersdorf.

Armin Weiss existed in a state of 'ordered chaos'! The piling of documents in his room, not only on the tables but also on the floor and on the chairs, was similar to the piling system of Walter D. Keller (1900–2001)[2]. He did not enjoy writing and answering letters but very much enjoyed engaging in lively discussions about all aspects of science and day-to-day life. He had an exceptional ability to convince people about his ideas.

A long career of scientific activity was followed by a number of years of political engagement (the latter involving much difficulty and hostility). Armin Weiss died, after a period of retirement, on December 7, 2010, at his home in Munich.

G. Lagaly and K. Beneke

[2] CMS News (2002), **13**, 8.

https://doi.org/10.1346/CCMN.2011.0590101 Published online by Cambridge University Press