



[www.geochemsoc.org](http://www.geochemsoc.org)

## NOMINATE A COLLEAGUE FOR A GEOCHEMICAL SOCIETY AWARD

The Geochemical Society (GS) awards are named after some of the pioneers in the field—Victor Goldschmidt, Alfred Treibs, Frank W. Clarke, and Clair Patterson. Today's geochemists continue to blaze new trails of discovery, and we need your help to recognize these innovative scientists. Nominating a colleague, student, or mentor for an award is an act of real generosity that highlights their achievements and can also inspire others. Anyone, with the exception of GS board members and those directly involved in the award selection process, may submit a nomination. This includes young geochemists as well as more senior scientists.

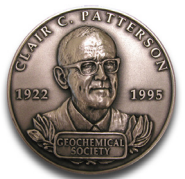
Considerable progress has been made regarding the diversity of nominees in recent years, but more progress is still needed. The cultural richness represented by GS members from 70 countries should also be reflected in the awards that we grant for scientific achievement. This is important not only in the interest of equity but also to ensure that all the young scientists who participate in the society and attend Goldschmidt conferences recognize their potential future selves in the persons being honored.

Please consider submitting a nomination this year by the 31 October 2017 deadline. Information on how to submit an award nominations package can be found at the GS's website: [www.geochemsoc.org/awards/makeanomination/](http://www.geochemsoc.org/awards/makeanomination/).

### The society is accepting nominations through Oct. 31 for the following:



The **V. M. Goldschmidt Award** is the society's highest honor. This award is presented for major achievements in geochemistry or cosmochemistry, consisting of either a single outstanding contribution or a series of publications that have had great influence on the field. It is named after Victor M. Goldschmidt (1888–1947) whose classification of the elements in the Earth and meteorites and pioneering work on crystal chemistry laid the basis of modern geochemistry. The importance of this award has been recently reinforced by a generous gift from former Goldschmidt award winner Prof. Gerald Wasserburg: the recipient will now be able to travel to the Goldschmidt conference to receive his or her award as a guest of the conference.



The **C. C. Patterson Award** recognizes an innovative breakthrough of fundamental significance in environmental geochemistry, particularly in the service of society, consisting of either a single outstanding contribution or a short series of papers published within the last decade. Clair C. Patterson (1922–1995) developed the uranium-lead dating method. Using lead and uranium isotopic data from the Canyon Diablo meteorite, he calculated the first accurate and precise age for the Earth.



The **F. W. Clarke Award** recognizes an early career scientist for a single outstanding contribution to geochemistry or cosmochemistry, published either as a single paper or as a series of papers on a single topic. Frank Wigglesworth Clarke (1847–1931) was a chemist who determined the composition of the Earth's crust.



The **Alfred Treibs Award**, presented by the Geochemical Society's Organic Geochemistry Division, is given for major achievements, over a period of years, in organic geochemistry. The legacy of Alfred Treibs (1899–1983) consists of his classic papers on porphyrins, which provided the starting point of organic geochemistry.

**Joint GS–EAG Geochemical Fellows.** In 1996, the Geochemical Society and the European Association of Geochemistry established the honorary title of Geochemical Fellow, to be bestowed upon outstanding scientists who have, over some years, made a major contribution to the field of geochemistry. Ten new fellows are selected each year. In addition, all recipients of the Goldschmidt, Patterson, and Treibs awards will automatically become Geochemical Fellows.

## MEETING ASSISTANCE PROGRAM

The Geochemical Society's Meeting Assistance Program provides support for symposia or conferences related to geochemistry. All GS members are eligible to apply. Awardees receive US\$2,000 and the society may award up to four per year. The GS Program Committee reviews applications twice a year; the next deadline is 30 September 2017. For more information, visit: [tinyurl.com/GeoChemMAP](http://tinyurl.com/GeoChemMAP).

## GS BOARD OF DIRECTORS OPEN POSITIONS

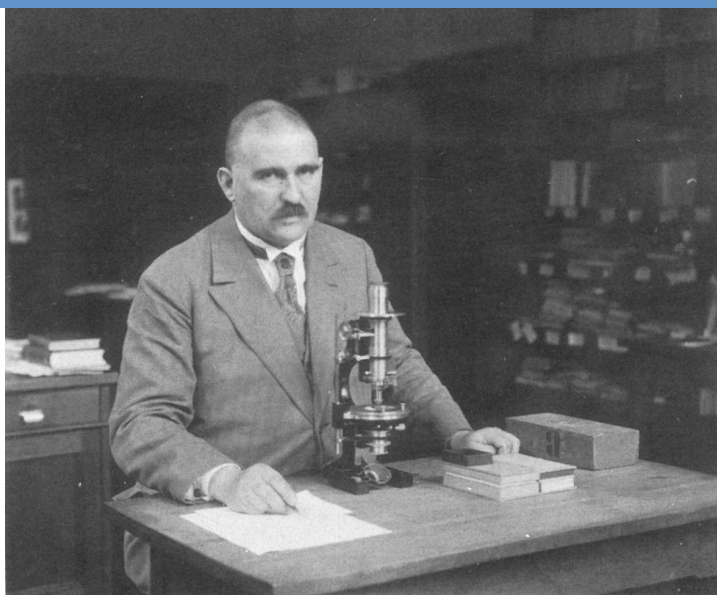
The Nominations Committee of the Geochemical Society is seeking nominees for the positions of vice president and two directors for terms beginning in January 2018. The potential nominees should have established reputations of leadership in geochemistry and be willing to devote considerable time and effort to the work of the society. Suggestions should be communicated by 15 September 2017 to any member of the Nominations Committee or to the GS business office at [gsoffice@geochemsoc.org](mailto:gsoffice@geochemsoc.org). More information regarding the duties and responsibilities of board positions can be found on the society's website.

## VICTOR MORITZ GOLDSCHMIDT: FATHER OF MODERN GEOCHEMISTRY

The term “geochemistry” had existed for 100 years when Victor Goldschmidt built upon technical developments of the time, as well as advances in physics and chemistry, to revolutionize the field by adding a theoretical underpinning to it, turning it into a mature science. Grossman (1993) expressed Goldschmidt's importance thus: “It is astonishing, even to experienced geochemists, just how many of the important concepts in this field originated with Goldschmidt”. Goldschmidt's was an interdisciplinary approach: “The field of geochemistry,” Goldschmidt wrote, “ranges widely over the broad ground of modern science, from astrophysics and nuclear and atomic physics to geology, oceanography, and biology...” (Goldschmidt 1954). We take a brief look at the life of this seminal figure.

Victor Moritz Goldschmidt was born in 1888 in Zurich (Switzerland) to a family of scientists of Jewish heritage. When his father was appointed Chair of Chemistry at the University of Oslo, the entire family moved to Norway. Victor was 13. He was drawn to nature in Norway, became interested in mineralogy, and profited from vacations in the countryside to study rocks. It is interesting that while traveling in Europe with his family in 1906, he saw a spectacular eruption of Vesuvius (Italy) and sent specimens back to his teachers.

When he entered the University of Oslo (Norway) his first research was on contact metamorphism in the Kristiania region of southern Norway. The results were published in 1911 in the classic monograph,



V. M. Goldschmidt sitting in his office in the Mineralogisk-Geologisk Museum in Oslo in the 1920s.

*Die Kontaktmetamorphose im Kristianiagebiet*, which detailed the application of physical chemistry to metamorphic petrology.

At the unusually young age of 26 he became full Professor of Mineralogy and Petrology at the University of Oslo. He also became, in 1917, the director of Norway's Raw Materials Lab, dedicated to finding Norwegian sources of minerals that were in short supply due to World War I. As a result of this investigation into the chemical nature of economic minerals, Goldschmidt came to the study of crystal chemistry just at the time when new and powerful techniques for elucidating crystal structure, such as X-ray diffraction, were being developed. Goldschmidt used these techniques brilliantly and developed the new science of crystal chemistry (Mason 1992).

Beginning in 1922, he began establishing the conceptual basis for geochemistry. In his nine monographs—known collectively as the *Geochemische Verteilungsgesetze der Elemente* (*Geochemical Laws of Distribution of the Elements*), which he published between 1923 and 1938—Goldschmidt laid out the fundamental laws of geochemistry and crystal chemistry.

In 1929, he was recruited to the University of Göttingen (Germany); there, he built and staffed a mineralogical institute where he spent several highly productive years. During these years, he conducted research in geochemistry with an emphasis on problems relating to the distribution of the rare elements between the solid crust of the Earth, the atmosphere, and the hydrosphere. The study was later expanded to the broader problem of the absolute abundance of all elements in the Earth, planets, and universe (Johnson 1985). He was nominated for a Nobel Prize during this time, the first of 11 nominations.

The rise of Nazism interrupted this productive work. As a Jew, he knew that he could be dismissed from the university at any time, but he initially resisted leaving. The situation became increasingly oppressive, however, and he eventually saw the writing on the wall. That is not merely a rhetorical statement: a sign saying, "Jews not desired" was posted outside his office, and he reluctantly decided to leave. He resigned from the University of Göttingen in 1935 and returned to Oslo.

In Norway, he continued his research, publishing the ninth part of his *Geochemical Laws*, which he called his "Ninth Symphony." In it, he arrived at a table of cosmic abundances, from a combination of

meteoritic and solar data, which provided the basis for later theories of the origin of the elements. "Goldschmidt's perception of the fundamental significance of meteorite compositions for geochemistry is another example of his scientific genius" (Mason 1992). This work provided the foundation for two later Nobel Prizes in physics to other scientists.

The dire world situation again intervened: Germany invaded Norway in 1940, and, in March 1942, all Jews in Norway were decreed to be "illegal immigrants." Twice he was arrested by the Gestapo; he was nearly boarded onto the prisoner ship *Donau*, but was pulled aside at the last moment and released thanks to the intervention of colleagues. The prisoners boarded that day were to be taken to Auschwitz, a concentration camp.

After this close call, he decided to flee with the help of the Norwegian Resistance. In December 1942, he and about 40 other refugees were smuggled over the frontier to Sweden.

In neutral Sweden, he was offered the chair of mineralogy at Uppsala University but he was determined to help in the war effort and decided to go Britain, where he felt that his knowledge of technical developments in Norway would be of value to the Allies. During his years in Britain, he worked on his *Geochemistry* opus, as well as lecturing extensively. He received many honors during this time: he was named a Foreign Member of the Royal Society in 1943, and, in 1944, he received the Wollaston Medal, the highest honor of Geological Society of London.

He returned to Oslo in 1946 but his health, never strong, had suffered greatly during the war. He died in March 1947 at the age of 59 from a cerebral hemorrhage.

At his death, he left his comprehensive treatise, *Geochemistry*, in draft form; it was completed by Alex Muir and published in 1954. It made Goldschmidt's work known to an English-speaking audience and became the standard text on geochemistry for many years (Glasby 2006).

According to his biographer, Brian Mason, "Goldschmidt's insight and intuition, his ability to plan and expedite extensive research programs, and not least his recruitment and inspiration of devoted research associates, revolutionized geochemistry" (Mason 1992). The Geochemical Society named its highest award, the Goldschmidt Medal, to recognize him.

In 1988, one hundred years after he was born, the first Goldschmidt Conference was held in Baltimore, Maryland (USA) and was attended by 463 geochemists. The program stated, "It is the intent of the participating societies that there should be a continuing series of conferences under this distinguished name." That wish has been fulfilled. Goldschmidt Conferences, organized by the Geochemical Society and the European Association of Geochemistry, have grown to be the premier meetings in geochemistry. They are now attended by some 4,000 scientists annually.

## REFERENCES

- Grossman L (1993) A Giant in Geochemistry [book review]. *Science* 261: 114-115
- Goldschmidt VM (1954) *Geochemistry*. Clarendon Press, UK, 730 pp
- Mason B (1992) Victor Moritz Goldschmidt: Father of Modern Geochemistry. *Geochemical Society Special Publication No. 4*, 184 pp
- Johnson KG (1985) Memorial of Lester William Strock January 23, 1906–March 21, 1982. *American Mineralogist* 70: 209-211
- Glasby GP (2006) V.M. Goldschmidt: the British connection. A tribute on the 60<sup>th</sup> anniversary of his death. *Geochemical News* 129: 14-31