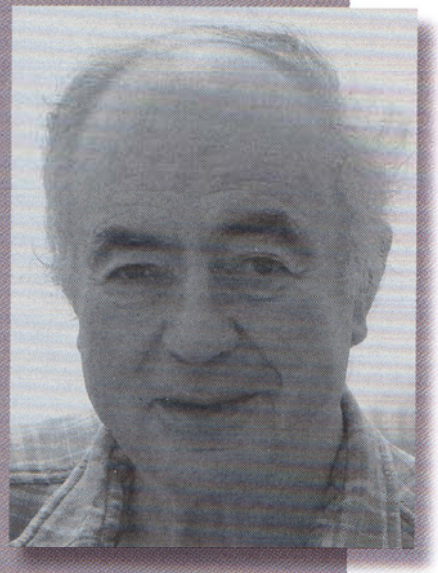


For outstanding achievements in research in the constitution and evolution of Earth and other planets.

Michael John O'Hara

Harry H. Hess Medal

The Harry H. Hess Medal recognizes "outstanding achievements in research in the constitution and evolution of Earth and other planets." It is thus most appropriate that Mike O'Hara receive the 2007 Hess Medal of the American Geophysical Union.

Mike started as a field geologist studying the Scourie Gneisses in Scotland. As a pioneer, Mike used experimental petrology to study the petrogenesis of mantle rocks and rocks derived from the mantle that build the ocean crust. Mike's talent is also marked by his insights into the petrogenesis of lunar basalts. It is fair to say that modern igneous petrology and geochemistry would not be the same without Mike's many discoveries, creative efforts, and deep insights.

Garnet peridotites cropping out along orogenic belts are not of crustal origin but are deep mantle rocks tectonically brought to the surface. This was, however, not understood before O'Hara and Mercy (1963).

Harzburgites are melting residues after basalt extraction from the more fertile lherzolite, but this was not obvious before O'Hara and Yoder (1963).

The plagioclase/spinel and spinel/garnet peridotite facies boundaries in P-T space are well-known concepts when discussing mantle melting, but it was Mike who correctly established the topologies (curvature) of these boundaries in the 1960s.

Mantle melting residues are compositionally depleted and physically buoyant, but

this concept and its geodynamic significance were not widely recognized until O'Hara (1973), who showed the difficulties of "mantle plume" models invoking undepleted fertile mantle that is too dense to ascend.

Mike demonstrated in the 1960s how changing pressure affects the peridotite-basalt phase equilibria. He understood back then that none of the erupted basalts is a primary magma, but most of us are too slow to appreciate this fact.

Mike predicted in 1965 that wet peridotite melting can produce silica-rich liquid resembling andesite, which was verified later by others.

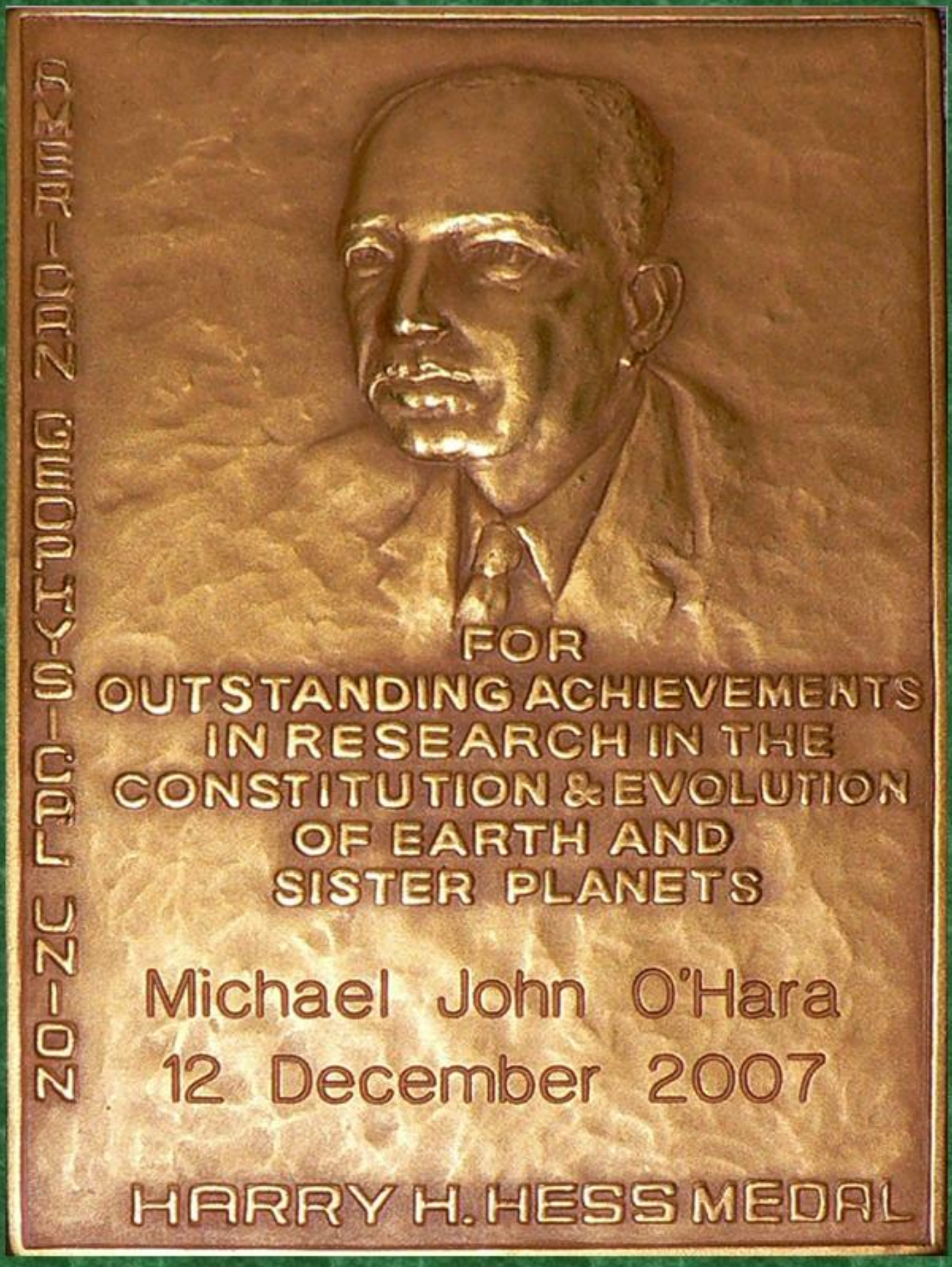
Mike invented in 1968 the CMAS projection to analyze phase relationships and compositional paths of basaltic magma generation and evolution. This powerful tool has been used ever since in various modified forms in research papers and in classrooms.

Mike quantified elegantly that trace element characteristics in basalts are not straightforward source signatures, but also record complex mantle melting and crustal magma chamber processes. Mike stimulated much debate on alkali volatilization, parental magmas and sources, and lunar composition and evolution. His 107-page-long paper (2000) is a classic account of lunar and terrestrial basaltic petrogenesis history in the twentieth century.

Mike's scientific success lies in his vision, insights, and approach—an approach that does not follow bandwagons, but challenges tradition and authority. It is his ability to debate and challenge that has rapidly advanced our field. Besides, Mike is a nice and caring man who has helped many Earth scientists in their endeavors with encouragement and advice. His enthusiasm continues to affect a new generation of scientists with the wonder of our planet.

Mr. President, members of the committee, and the Union, it is my great pleasure to present Mike O'Hara to you as the Harry Hess medalist for 2007.

—Yaoling Niu,
Durham University


AMERICAN GEOLOGICAL INSTITUTE
FOR
OUTSTANDING ACHIEVEMENTS
IN RESEARCH IN THE
CONSTITUTION & EVOLUTION
OF EARTH AND
SISTER PLANETS
Michael John O'Hara
12 December 2007
HARRY H. HESS MEDAL

AGU
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2007 Fall Meeting

Wednesday, The Twelfth of December
Seven Thirty o'clock P.M.

San Francisco Marriott Hotel
San Francisco, California