The Harry Hess Medal serves to highlight and honor "outstanding achievements in research of the constitution and evolution of Earth and sister planets." There can be no doubt that Frank Richter's research throughout his career clearly falls within this award's scope. Frank has made fundamental contributions to the Earth Sciences through the application of simple but rich physical and chemical modeling and experimental investigations across a remarkably diverse spectrum of the geological sciences. Frank's mode of research is to identify critical problems, develop a fundamental, first principles-based understanding, and then to delve deeply into the broader consequences and implications for the earth sciences. This approach has characterized his work ranging from applying fluid dynamics to investigations of mantle dynamics and the driving forces of plate tectonics, mantle convection as it affects the thermal and chemical evolution of the mantle, mantle melting and melt segregation, diffusion-advection models for the Sr isotope evolution of deep sea sediments and seawater, $^{40}Ar/^{39}Ar$ thermochronometry exploiting the multi-domain diffusion of Ar in K-feldspar, compositional and isotopic effects of multi-component diffusion during silicate melting, and more recently kinetic isotope fractionation by mass transport due to diffusion or evaporation.. At each stage of his career, Frank's research has contributed or defined the state-of-the-art in each of these areas. Many of his papers are classics and are (or should be) required reading for anyone embarking on research in each of the areas that his research has touched upon.

Take a moment to reflect on the list of areas in which Frank has made seminal contributions. It is truly remarkable. His approach is to identify an Earth Science-related problem where he can make a significant contribution, work rather single-mindedly until he succeeds to some satisfying degree and then move on once he feels that further efforts would not yield as significant results as what he has already achieved. This mode of declaring success and moving on helps explain the remarkable diversity of his contributions, and the impossibility of classifying Frank-fluid dynamicist, geodynamicist, geochemist, experimental petrologist, or cosmochemist. All of these apply and would characterize some phase in his career. These are not dalliances, but fully engaged intellectual pursuits to deeply understand some fundamental property of the natural world by developing mathematical models based on rigorous experimental and analytical approaches to better understand how physics and chemistry affect the evolution of natural systems. Frank is also a careful listener and reader, whose questions and input can often be transformative of the research of his friends and colleagues. I, for one, can say that I believe I am better scientist as a result of interactions with Frank over the years, and am most grateful for his generosity and critical input.

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