

Citation for the 2019 MSA Distinguished Public Service Medal to Rodney Charles Ewing

Kevin D. Crowley

National Academies of Sciences, Engineering, and Medicine (retired)

Dear members and guests of the Mineralogical Society of America: It is an honor and a distinct pleasure to provide the citation for the Society's 2019 Distinguished Public Service Medal, which is being awarded to Dr. Rodney Charles Ewing, the Frank Stanton Professor in Nuclear Security and Professor of Geological Sciences at Stanford University.

The Distinguished Public Service Medal is intended to honor individuals who "have made important contributions to furthering the vitality of the geological sciences ... exclusive of original scientific research." I don't know anyone more deserving of this award than Rod.

Rod is first and foremost an extraordinarily creative and productive scientist, having authored or coauthored over 750 research publications and established fruitful research collaborations with scientists in several countries. He is also a founding editor of Elements Magazine, co-published by 18 national and international scientific organizations, which focuses on current themes in the mineralogical and geochemical sciences.

Rod's substantial contributions to science have already been recognized by MSA and other scientific organizations. He is a fellow of several scientific societies including MSA. He received the Lomonosov Gold Medal from the Russian Academy of Sciences in 2006 for research on nuclear waste management and the nuclear fuel cycle. He was awarded MSA's Dana Medal in 2006 and the Roebling Medal in 2015 for outstanding scientific contributions and original research in mineralogy. And he was elected to the U.S. National Academy of Engineering in 2017 for scientific contributions to the long-term behavior of complex ceramic materials for sequestering nuclear waste.

Rod has achieved MSA's first trifecta—receiving the Dana Medal, Roebling Medal, and Distinguished Public Service Medal for his contributions to the geological sciences.

Rod's efforts to further the vitality of the geological sciences began with his work as an educator. His career has spanned 45 years so far at three universities—University of New Mexico, University of Michigan, and Stanford University. He has had visiting appointments at over a dozen universities in Europe, Japan, and Australia, and at two U.S. national laboratories. His teaching has touched the lives of thousands of undergraduate students and hundreds of graduate students and postdocs in the geosciences and related disciplines. Many of Rod's students and postdocs have gone on to distinguished careers of their own, expanding the frontiers of the geological sciences and educating future generations.

While a young faculty member at the University of Mexico, Rod led a multiyear effort to establish the Harding Pegmatite mine in northern New Mexico as a resource for teaching students and the public about scientifically important mineral associations. He worked closely with the mine's then-owner, the late Arthur Montgomery, over a period of years to arrange for the donation. He also convinced the university to create the position of on-site custodian to allow for the public

1 visitation of the mine, and he established procedures for such visitation that are still used today.
2 More than 35,000 people have visited the mine since the early 1980s.

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4 While at the University of Michigan, Rod provided leadership for the creation of the Michigan
5 Mineral Alliance. This alliance allowed the University of Michigan's extensive mineral collection,
6 which was established beginning in the nineteenth century, to be curated and exhibited at the A.
7 E. Seaman Mineral Museum at the Michigan Technological University.

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9 Rod's efforts to further the vitality of the geological sciences goes well beyond his teaching-
10 related work. He has been a major force in the application of science and technology to national
11 and international public policy making on nuclear waste management and disposal. His
12 mineralogical and materials sciences research has greatly improved scientific understanding of
13 the physical, chemical, and radiological properties of materials for sequestering nuclear waste
14 and the behavior of these materials in deep geological repositories. He is the co-editor of three
15 books that have been influential in shaping scientific and policy thinking on the long-term safety
16 of geological disposal: Radioactive Waste Forms for the Future (1988); Uncertainty
17 Underground: Yucca Mountain and the Nation's High-Level Waste (2006); and Reset of
18 America's Nuclear Waste Management: Strategy and Policy (2018).

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20 Rod was nominated by the president of the National Academy of Sciences and appointed by
21 President Barack Obama to serve on the U.S. Nuclear Waste Technical Review Board, an
22 independent federal agency that provides technical oversight of the U.S. Department of
23 Energy's (DOE's) efforts to manage spent nuclear fuel and high-level radioactive waste. He
24 served on the board from 2012-2016 and was board chair during the last five of those years.
25 Rod led the board through a difficult transition in DOE's waste disposal program, helped mentor
26 new board members and technical staff following a major turnover of agency personnel, and
27 represented the board in interactions with Congress, DOE upper management, and the public.

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29 Rod has devoted considerable time, all pro bono, and public service to the Nation through his
30 work for the National Academies of Sciences, Engineering, and Medicine. He has served on
31 three standing National Academies boards—Board on Radioactive Waste Management,
32 Nuclear and Radiation Studies Board, and Board on Earth Sciences and Resources—that
33 provide programmatic advice to Academies management as well as 10 expert committees
34 created to provide scientific and technical advice to federal agencies and Congress. Rod's
35 committee work has focused primarily on cleanup, management, and disposal of nuclear wastes
36 and includes a joint study with the Russian Academy of Sciences. His high productivity, good
37 scientific judgment, and ability to work with scientists and engineers from different disciplines to
38 address difficult technical and policy issues has made Rod both a well-regarded and highly
39 effective committee member.

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41 Rod's service on the National Academies Committee on the Waste Isolation Pilot Plant
42 deserves special mention. This committee provided technical advice to DOE on the
43 development of a deep geological repository near Carlsbad, New Mexico, for the disposal of
44 defense transuranic waste. The committee wrote several hard-hitting reports that were
45 controversial at the time but arguably saved DOE from making substantial technical and
46 programmatic blunders. The committee's technical guidance was essential to the successful
47 opening of the repository in the late 1990s.

1 Rod made numerous intellectual contributions to the work of this committee during his almost 14
2 years of membership, foremost of which perhaps was highlighting the importance of quantifying
3 potential releases of radioactive materials from the repository through an improved
4 understanding of waste forms and their interactions with the repository environment.

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6 Rod's effectiveness as a scientist, educator, and public policy advisor is the result of several
7 personal qualities: intellectual curiosity and boundless energy, excellent writing skills, and highly
8 effective collaboration skills. I had the good fortune to work with Rod on a research project long
9 ago, but I really came to understand his skills as a scientist and collaborator while serving as a
10 National Academies board director and study director. Nominator Dr. Chris Stefano
11 (Mineralogical Record Magazine) identified some of the qualities that have served Rod so well:
12 Rod "would always defer to your expertise if he thought you knew more than him about a
13 subject." And "[H]e is practical, humble and truly brings out the best in those who he works
14 with."

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16 I close this citation by quoting from Professor Michael Hochella's (VirginiaTech) nomination
17 letter: "It is my humble estimation that Rod is one of the top three mineralogists in the world
18 today. I know that my claim is extraordinary, as there are many, many thousands of academic
19 and professional mineralogists, with a large number in positions of great influence and prestige.
20 However, virtually none are as important or as influential as Rod. He not only has just about
21 every award and honor in his field of study, but (more importantly) he has made a difference for
22 many years in the way the United States and the world look at nuclear waste management from
23 a scientific and practical sense."

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25 It gives me great pleasure to present MSA's 2019 Distinguished Public Service Medalist Rod
26 Ewing.
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