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**Heirs of the revolution: X-ray diffraction and the birth of the
Mineralogical Society of America**

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ABSTRACT



The founding of the Mineralogical Society of America (MSA) in 1919 followed so closely on the heels of the discovery of X-ray diffraction (XRD) in 1912 that one might hypothesize a causal link. Was MSA born out of this scientific revolution? The formation of our Society conventionally is attributed to the desire for a professional journal and the need to emerge from the shadow of the Geological Society of America, but these issues were not new in 1919. This review argues that MSA's birth can be understood by an exploration of two historical strains: (1) Although modern notions of atomism traditionally are associated with the emergence of the kinetic theory of gases in the late 19th century, mineralogists had invoked ordered atomic spheres as the fundamental metaphor for crystalline structures over a century earlier, leading directly to W.L. Bragg's discovery of the atomic design in halite; and (2) in contrast to the broader chemistry community, mineralogists were uniquely poised to embrace X-ray diffraction and the revolution in crystallography that attended it. This revelation gave rise to a sense of distinct identity.

An examination of MSA's early records unambiguously reveals that U.S. mineralogists were closely attuned to the crystallographic insurgency as it took place across the Atlantic. In particular, Edgar T. Wherry, one of the organizers of the *American Mineralogist* and of the Society, actively disseminated information about the new discoveries to his colleagues in the United States. Other founders of MSA similarly championed the transformative character of the new crystallography, thereby warranting the establishment of a specialized professional society. The continuing force of the revolution is revealed in a counter-reaction a century later, as mineralogists have renewed their focus on phases at the boundary between crystals and glasses, leading to reconsiderations of the meaning of crystallinity.

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