Editorial

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Engineering systems of all kinds are constructed from materials that meet design specifications. Those engineering systems are assembled and then operated, inspected and maintained during performance in service environments. The environmental degradation of materials, whether contemporary or advanced materials, is well known phenomenologically. Mechanistic understanding is often the subject of intense research and concurrent debate. This is true of environmentally assisted cracking (EAC), which is sometimes described as environmentally induced cracking (EIC). The debate is in part a reflection of the complexity of EAC. In order to develop an understanding of any EAC phenomenon, stress corrosion cracking or hydrogen embrittlement are examples, researchers must take into account the microstructural characteristics of the materials, chemical interactions with the service environment and mechanical forces that are imposed as the system performs. This ongoing series of conferences has assembled researchers who have experience in all of these areas. Our goal is to develop a core of understanding in which appreciation of materials, chemistry and mechanics essentials are common to all EAC researchers. Moreover, the convergence of experimental tools which allow atom scale observations and simulation and modeling tools for characterizing materials, chemical and

mechanical interactions provides some room for optimism that mechanistic fundamentals will become elucidated and with such understanding EAC will become manageable.

During our next Workshop, scheduled to be held in the USA in Reston, VA in 2020, we wish to focus attention on the initiation phase of EIC, an aspect receiving scant detailed attention in the past due the general unavailability of experimental methods providing the necessary local precision/resolution. Suitable experimental methods and modeling techniques are now available and we wish to solicit contributions on all aspects of EIC initiation, including the development of the required local microstructural/geometrical/environmental conditions and the role of local plasticity.

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