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Key Environmental Issue Webinar Series 10 for Overseas Chinese Environmental Engineers & Scientists Association

Coal Mine Drainage as a Potential Source of Rare Earth Elements

October 30, 2022; 6:00-7:00 PM PDT / October 31, 9:00-10:00 AM 中国标准时间



[About the Speaker] John J. Lenhart, Ph.D. is a Professor of Environmental Engineering and Co-Director of the Ohio Water Resources Center at The Ohio State University. He received his Ph.D. in Environmental Science and Engineering from the Colorado School of Mines in 1997. His current research investigates contaminant interactions with interfaces in heterogenous systems and includes characterizing contaminant coordination to natural and engineered surfaces and the dependence of this coordination state on the structure of the underlying surface. He also studies interactions between particles and surfaces in the environment, such as those that occur with nanoparticles and microplastics. He has authored or co-authored more than 100 publications and is the recipient of an NSF Career Award.

[Abstract] Coal mine drainage (CMD) produced by abandoned and reclaimed coal mines in the Appalachian region of the United States is a significant and chronic environmental and public health issue. The clean-up of these sites is cost prohibitive, and thus there is a need to develop new methods to treat CMD because funds to mitigate the drainage, especially for those discharging from abandoned mines, are limited. Analyses of CMD discharges from abandoned/reclaimed coal mines in Ohio concentrations found rare earth elements (REEs) orders of magnitude higher in CMD than average river water and seawater. This suggests that CMD could serve as a source of REEs and that the sale of the recovered REEs could be used to offset the cost of CMD treatment. This talk will provide an overview of REE presence in coal, coal byproducts, and CMD and describe the potential for these sources to be recovered during CMD treatment.

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Moderator: Dr. Sen Li (李森)

Technology Manager at Eastman Chemical Company in Tennessee and the 2022 Public Outreach Chair of Northeast Tennessee Section of American Chemical Society (NETS-ACS).