



## Preface

The first demonstration of electrokinetic phenomena in soils can be dated to 1808 when Reuss showed water transport in porous media under the influence of electric fields. In the 1930s, Leo Casagrande was the first to utilize electrokinetic phenomena for soil dewatering and improvement. Limited research was conducted on the use of electric fields for treatment of contaminated soils until 1986, when a workshop on "Electrokinetic Treatment for Hazardous Waste Site Remediation" was held on August 4-5, at the University of Washington, Seattle, Washington. Following the workshop, several researchers in the United States and Europe took the lead to demonstrate potential applications of electric fields for decontamination of soil and groundwater. The research was supported by various local, state, and federal agencies including the U.S. Department of Defense (DOD), the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), the Electric Power Research Institute (EPRI) and the National Science Foundation (NSF). Recently, DOD and DOE have identified electrokinetics as a potential cost-saving, innovative *in-situ* clean-up technology.

This special edition presents nineteen papers on recent advancements in electrochemical decontamination of soil and water. The papers address various topics, including the effects of pore fluid chemistry on transport mechanisms under electric fields, field implementation and economic aspects of electrokinetic remediation, enhancement techniques and mathematical modeling. The papers are written by experts in the field and provide significant contributions to the state-of-the-art on electrochemical decontamination of soil and groundwater.

The work on this special edition was initiated in the summer of 1995 when Dr. James Mitchell recommended that Dr. Yalcin Acar organize an edition for the *Journal of Hazardous Materials*. The dedicated work of Dr. Acar on this special edition was interrupted in May 9, 1996 by his death. The edition was then completed with the help of the Paper Board Review Members and Electrokinetics Inc. The efforts of Elif O. Acar, Gloria Curtis, Robert Gale, and Susheel Puppala are greatly appreciated. This special edition was made possible through the support of Dr. Gary Bennet, Dr. James Mitchell and Elsevier Science Publishing Co. Inc.

It is hoped that this edition will be a significant step toward utilizing applied electric fields for environmental restoration.

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