Resistivity and Induced Polarization
Theory and Applications to the Near-Surface Earth

Andrew Binley
Lancaster University

Lee Slater
Rutgers University, New Jersey

Resistivity and induced polarization methods are used for a wide range of near-surface applications, including hydrogeology, civil engineering and archaeology, as well as emerging applications in the agricultural and plant sciences. This comprehensive reference text covers both theory and practice of resistivity and induced polarization methods, demonstrating how to measure, model and interpret data in both the laboratory and the field. Marking the 100 year anniversary of the seminal work of Conrad Schlumberger (1920), the book covers historical development of electrical geophysics, electrical properties of geological materials, instrumentation, acquisition and modelling, and includes case studies that capture applications to societally relevant problems. The book is also supported by a full suite of forward and inverse modelling tools, allowing the reader to apply the techniques to a wide range of applications using digital datasets provided online. This is a valuable reference for graduate students, researchers and practitioners interested in near-surface geophysics.

Preface; Acknowledgements; List of symbols; 1. Introduction; 2. Electrical properties of the near surface Earth; 3. Instrumentation and laboratory measurements; 4. Field configuration and acquisition; 5. Forward and inverse modelling; 6. Case studies; 7. Future developments; Appendix A. Modelling tools; Index.