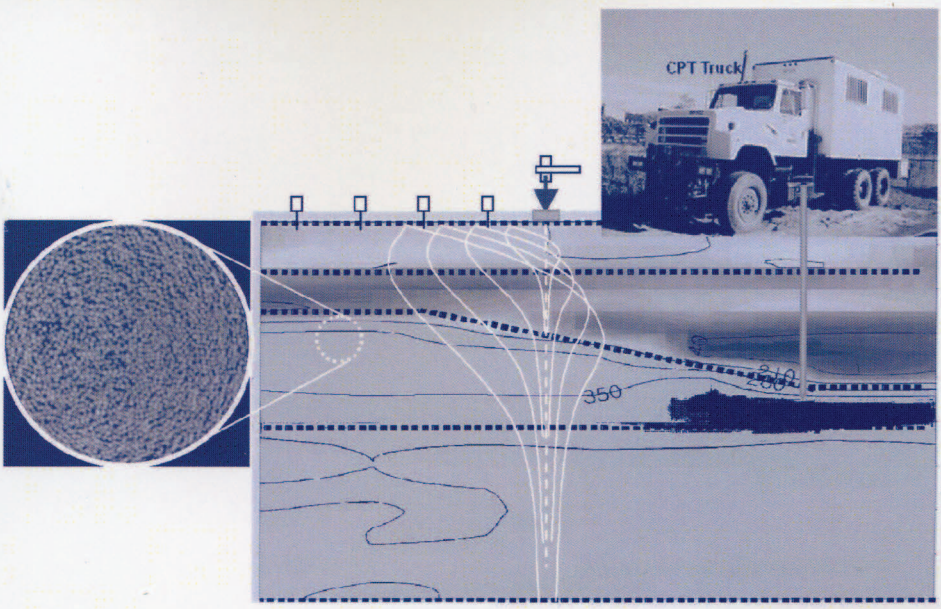


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Site and Geomaterial Characterization

上海

EDITED BY Anand J. Puppala
Dante Fratta
Khalid Alshibli
Sibel Pamukcu

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Preface

The Geotechnical Special Publication "Site and Geomaterial Characterization" contains more than 40 technical papers that address issues ranging from the micro-characterization of processes to the in situ evaluation of engineering properties of soils. The papers are grouped into four major sections. The first section includes the general theme paper presented by James K. Mitchell, University Distinguished Professor, Emeritus, Virginia Polytechnic Institute and State University. Professor Mitchell has dedicated his distinguished academic career to the study of the physico-chemical behavior of soils, soil improvement and geomaterial characterization. He has often said that the "most important part of success in any geotechnical problem or project is the proper site and material characterization." The editorial committee is pleased that Professor Mitchell has chosen our special publication to include his general theme lecture.

The second section is a special section devoted to recognizing the services of Dr. Mehmet T. Tumay, Georgia Gulf Distinguished Professor Emeritus in the Department of Civil and Environmental Engineering at Louisiana State University (LSU) for his immense contribution to research and practice in geotechnical engineering. Professor Tumay was the leader of the LSU Geotechnical Engineering group for more than thirty years where he led the in situ testing and calibration chamber research and educated generations of researchers and engineers now contributing to geotechnical engineering around the World. Several of his colleagues, friends and former students wrote papers dealing with problems related to a variety of cone penetration testing methods and their applications to in situ soil characterization for geotechnical and environmental purposes. A two-page section highlighting Professor Tumay's long-list of achievements and accomplishments is also included in the same section.

The third section covers non-destructive evaluation and geophysical testing to address soil characterization problems relevant to foundation exploration, geoenvironmental evaluation, and earthquake related topics. Papers include studies ranging from the micron-millimeter scale using computed tomography, Magnetic Resonance Imaging (MRI), digital imaging and wave propagation techniques to the meter scale using seismic geophysical techniques. Finally, the fourth section contains several other in situ testing methods that deal with the analysis of field data and interpretation of soil properties as well as simulation of in situ testing using numerical models. All technical papers in this special publication address one of the greatest challenges in geotechnical engineering research and practice: the evaluation of geomaterial properties with minimal to no disturbance states.

Two other papers published in a CD-ROM were distributed at the conference. These papers focus on site characterization and geomaterial characterization from micro-geomechanics point of view. These are:

- "Stress-Strain-Strength of Soils from In-Situ Penetration Tests" by Professor Paul W. Mayne, Georgia Institute of Technology, USA – 2nd James K. Mitchell Lecture

- "Micro-geomechanics: Characterization and Behavior" by Professors J. David Frost and J. Carlos Santamarina, Georgia Institute of Technology, USA

All the papers included in this ASCE Geotechnical Special Publication (GSP) were evaluated by two or more reviewers and the editors. The authors of the accepted papers have addressed all the reviewers' comments to the satisfaction of the editors. All published papers are eligible for discussion in the Journal of Geotechnical and Geoevironmental Engineering, and are also eligible for ASCE awards.

The papers in this publication were presented during the GeoShanghai International Conference held in Shanghai, China, June 6 - 8, 2006. This conference was hosted by Tongji University and the Shanghai Society of Civil Engineering, China in cooperation with the ASCE Geo-Institute, Georgia Institute of Technology, The University of Kansas, The University of Tennessee, International Association of Foundation Drilling, Deep Foundation Institute (USA), Saga University (Japan), and Delft University of Technology (Netherlands).

We are thankful to Professor Yongsheng Li, the GeoShangai Conference chair, and Professors Hehua Zhu, Paul W. Mayne and Jie Han who have been instrumental in organizing the GeoShanghai Conference. Thanks are also due to Ms. Carol Bowers for her enthusiastic support to this conference, Professor Songyu Liu for his assistance from China and Venkata S. Dronamraju, doctoral student at The University of Texas at Arlington for his help in compiling the papers. Without their significant contributions, it would have been impossible to finish this publication in time. In producing this Geotechnical Special Publication, the editors would also like to acknowledge the assistance of Ms. Donna Dickert at ASCE Geo-Institute.

Finally, we would like to acknowledge the ASCE Engineering Geology and Site Characterization (EGSC) Committee and its members for sponsoring site characterization activities at the International Geoshanghai Conference in Shanghai, China.

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For any reviewer whose name was inadvertently missed, we offer our sincere apologies.

In Honor of Prof. Dr. Mehmet Taner Tümay for His Contributions in Geotechnical Engineering

We are deeply proud of the opportunity to constitute this special session to honor Mehmet T. Tümay for his outstanding contributions to the profession, research and education in geotechnical engineering.

As his students and colleagues, we share the profound influence Mehmet Tümay has had on our careers through his professional vision, rigor and integrity as an educator. Professor Tümay is such an exceptional teacher and mentor, whose long and selfless dedication to education and training of both graduate and undergraduate students qualifies him for this important recognition. His vision and leadership in creating a nationally and internationally recognized Geotechnical Engineering program at LSU is one of the many highlights of his professional career. Mehmet Tümay continued his outstanding contributions to the field during his service years at National Science Foundation, Transportation Research Board, US Universities Council for Geotechnical Education and Research, and Geo-Institute of ASCE.

Dr. Tümay, Fellow and a Life Member of the American Society of Civil Engineers, is the Georgia Gulf Distinguished Professor Emeritus in the Department of Civil and Environmental Engineering at Louisiana State University, Baton Rouge, Louisiana. He has been on active LSU Faculty 1976-2005, and has served the LSU College of Engineering as the Associate Dean for Research and Graduate Studies, and as Director of the Donald W. Clayton Interdisciplinary Graduate Program in Engineering Science, 1997 –2004. Dr. Tumay received his B.S., M.S., and Ph.D. from Robert College School of Engineering, University of Virginia, and Istanbul Technical University, 1959, 1961 and 1971 respectively. He also holds a 1975 postdoctoral Dozent degree from Istanbul Technical University. His academic, research and consulting affiliations include universities, research institutions, and industry in the U.S., The Netherlands, France, Turkey, Korea, Norway, Taiwan, Poland, Brazil and People's Republic of China.

A visionary and leader in the development of and application of cone penetration testing in geotechnical engineering, Mehmet Tümay has done extensive research for the past 40 years in the areas of in-situ evaluation of engineering properties of soils, soil physico-chemical behavior, and novel methods of soil improvement. He has earned national and international recognition from the consulting and academic communities for his pioneering research accomplishments, mainly in electronic cone penetration and computer-aided data collection/reduction systems for evaluation of the engineering behavior of particulate media. Dr. Tümay has served as Project Director/Principal Investigator of numerous grants from prestigious national and international agencies, including the U.S. National Science Foundation, the Office of Naval Research, the Federal Highway Administration, the National Cooperative Highway Research Program, the French Ministry of Research, and the United Nations Development Program. A major international consulting company from the Netherlands established the "Fugro Post-Doctoral fellowship at LSU dedicated to the advancement of in-situ testing under Dr. Tümay's supervision." His scholarly activities

include more than 150 published scientific articles, and contributions to numerous conferences and symposia. He has presented many invited papers worldwide on technical topics, general research and education issues in geotechnical engineering.

Dr. Tümay was a charter member of the Academic Research Council (ARC) of the Civil Engineering Research Foundation (CERF), and represented LTRC on the National Council for Civil Engineering Research (NCCER) of CERF. Dr. Tümay has been active in TRB since 1962. He presented his first paper at the 41st Annual meeting of Highway Research Board (HRB) in 1962. He has attended just about every meeting of Transportation Research Board (TRB) since 1976, and has been the LSU representative (1995 – Present). From 1982-1997, he was a Member of TRB A2L02 committee on Soil and Rock Properties, and served as Vice chair from 1986-89 and served as the Chairman from 1989-1995. During 1996-2002, he was Chairman of the NRC/TRB Section A2L00 "Geology and Properties of Earth Materials," overseeing six technical committees (A2L01-A2L06) and was on the NRC/TRB Group A2000 Council on "Design and Construction of Transportation Facilities," and served as Chairman of the "Scope, Organization and Function Committee, 1999-2002. Dr. Tümay was elected to occupy one of the highly distinguished positions of Emeritus Membership of the Transportation Research Board in 2003.

Mehmet Tümay, served as the Director of the Geomechanical, Geotechnical & Geo-Environmental Systems (G3S) program at the National Science Foundation, Washington, D.C., during 1990-1994. In March 1994, Dr. Tümay was appointed as the Director of Research at Louisiana Transportation Research Center (LTRC) to initiate/broaden technology development and implementation concepts, and to expand the nationally competitive cross-disciplinary funding base from external sources. In 1994 he was elected to the Board of Directors of U.S. Universities' Council on Geotechnical Engineering Research, USUCGER, and served as the treasurer for 1994-1996, and as the president for 1997-1999. Dr. Tümay is a charter Associate Editor (Assessment Technologies) of the ASCE Journal of Infrastructure Systems, and has been on the Editorial Board of the ASCE Journal of the Geotechnical Engineering, 1984-1994. He has been active in ASCE Committees on Publications, Placement and Improvement of Soils, and Safety and Reliability.

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