Civil Engineering
and Environmental Geomechanics

April 2015 updated catalog
forthcoming, new and backlist book titles

27-37 St George's Road – London SW19 4EU — United Kingdom
### Scientific Committee

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### Topics covered

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### Forthcoming Sets

- **Cements of the Future** coordinated by Georges Aouad
- **Concrete** coordinated by Christian La Borderie and Alain Sellier
- **Discrete Granular Mechanics** coordinated by Félix Darve
- **Multi-physics Coupling in Geomaterials** coordinated by Félix Darve
- **Natural Disasters** coordinated by François Nicot

### Forthcoming Titles

- Electro-hydraulic Fracturing of Rocks by Pijaudier-Cabot Gilles *et al.*
- Fresh Concrete Rheology by Roussel Nicolas
- In Situ Tests in Geotechnical Engineering by Monnet Jacques
- Low Environmental Impact Concrete by Loukili Ahmed
- Structures Design and Degradation Mechanisms in Coastal Environment by Ait-Mokhtar Karim, Millet Olivier
Civil Engineering and Environmental Geomechanics

Sets – Forthcoming and published Titles

Discrete Granular Mechanics

Bridging the Gap by Magnanimo Vanessa, Luding Stefan
Calibration and Validation of Granular Continuum Models from Particle Data
  by Weinhart Thomas, Luding Stefan, Thornton Anthony Thornton
DEM Simulations of Bonded Granular Materials by Jiang Mingjiang
Discrete Mechanics of Capillary Bridges by Gagneux Gérard, Millet Olivier
Dry Stone Retaining Structures by Viggiani Cino, Plassiard Jean-Patrick, Fry Jean-Jacques
Experimental Discrete Granular Mechanics by Combe Gaël, Vigiliani Cino
Force Transmission in Granular Materials by Radjai Fadhil, Azéma Emliien, Delenne Jean-Yves
Formation and Evolution of Geological Grains and Sediments by Matsushima Takashi
Gravity Hazards by Richefeu Vincent, Villard Pascal
Handbook of Discrete Element Method for Granular Materials by Chareyre Bruno
High Performance Computing and Discrete Element Model by Zhao Gao-Feng
Inside the Structure of Granular Materials by Nicot François, Darve Félix
Mesoscale Complexity and Emergent Behavior in Dense Granular Systems by Tordesillas Antoinette
Micromechanics of Granular Materials by Kruyt Niels P., Rothenburg Leo
Multiscale Computation of Failure in Granular Media by Wan Richard
Relationships between the Average Strain Tensor of a Discrete Medium and the Average Conformation Tensor of Interatomic Bonds of a Continuous Medium by Bonelli Stéphane, Desoyer Thierry
The Critical State Framework for Soil Behaviour by O’Sullivan Catherine, Hanley Kevin, Huang Xin
The Signature of Anisotropy in Granular Media by Zhao Jidong

Natural Disasters

Design of Protection Works Against Torrent Floods
  by Tacnet Jean-Marc, Queffelean Yann, Deymier Christian, Carladous Simon
Failure in Geomaterials Handbook by Nicot François et al.
Forest Fire Evolution by Sauvagnargues Sophie, Ayral Pierre-Alain
Geomechanics of Lanslides by di Prisco Claudio
Equilibrium and Transfer in Porous Media
Jean-François Daïan, Laboratoire d'Étude des Transferts en Hydrologie et Environnement, Grenoble, France

Coordinated by Félix Darve

Volume 1 – Equilibrium States
This first volume in the three-volume series focuses on fluids in equilibrium in the pore space; interfaces, the equilibrium of solutions and freezing in porous media; and gives experimental investigations of capillary behavior and porometry.

Contents
1. Fluids in Equilibrium in the Pore Space: Capillary Behavior.
2. Interfaces, Equilibrium of Solutions and Freezing in Porous Media: Thermodynamic Aspects.

ISBN: 9781848216754 • 2014 • 240 pages • USD 115.00 • ISTE-WILEY

Volume 2 – Transfer Laws
The second volume in the three-volume series focuses on transport and transfer from homogeneous phases to porous media, and isothermal transport in the pore space.

Contents
2. Isothermal Transport in the Pore Space.

ISBN: 9781848216761 • 2014 • 240 pages • USD 115.00 • ISTE-WILEY

Volume 3 – Applications, Isothermal Transport and Coupled Transfers
This third volume in the three-volume series focuses on the applications of isothermal transport and coupled transfers in porous media.

Contents
1. Isothermal Transport in Porous Media: Applications.

ISBN: 9781848216778 • 2014 • 336 pages • USD 145.00 • ISTE-WILEY
Energy Geostructures

Innovation in Underground Engineering
Lyesse Laloui and Alice Di Donna, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

Coordinated by

Energy geostructures are a tremendous innovation in the field of foundation engineering and are spreading rapidly throughout the world. They allow the procurement of a renewable and clean source of energy which can be used for heating and cooling buildings. This technology couples the structural role of geostructures with the energy supply, using the principle of shallow geothermal energy.

This book supplies the reader with an exhaustive overview on the most up-to-date and available knowledge of these structures. It details the procedures that are currently being applied in the regions where geostructures are being implemented.

Part 1 is devoted to the physical modeling of energy geostructures, including in situ investigations, centrifuge testing and small-scale experiments.

The second part includes numerical simulation results of energy piles, tunnels and bridge foundations, while also considering the implementation of such structures in different climatic areas.

The final part concerns practical engineering aspects, from the delivery of energy geostructures through the development of design tools for their geotechnical dimensioning.

The book concludes with a real case study.

Magnetic Resonance Imaging for Groundwater

Anatoly Legchenko, IRD, Marseille, France

Coordinated by François Nicot

This book presents the basics of the non-invasive geophysical method for groundwater investigation, called Magnetic Resonance Sounding (MRS) or Surface Nuclear Magnetic Resonance (SNMR), and its practical application to the problems of groundwater localization and aquifer characterization.

The method is based on the nuclear magnetic resonance (NMR) phenomenon and is selectively sensitive to groundwater.
Erosion in Geomechanics Applied to Dams and Levees
Edited by Stéphane Bonelli, Irstea, Aix-en-Provence, France

Coordinated by François Nicot

ISBN: 9781848214095 • 2013 • 416 pages • USD 175.00 • ISTE-WILEY

Contents
2. Contact Erosion.
5. Relationship between the Erosion Properties of Soils and Other Parameters.

Seismic Vulnerability of Structures
Edited by Philippe Guéguen, Joseph Fourier University, Grenoble, France

Civil Engineering and Environmental Geomechanics Series

ISBN: 9781848215245 • 2013 • 368 pages • USD 145.00 • ISTE-WILEY

Contents
6. Approach Based on the Risk Used in Switzerland.

Bio-aggregate-based Building Materials
Applications to Hemp Concretes
Edited by Sofiane Amziane, Polytech Clermont Ferrand and Laurent Arnaud, Joseph Fourier University, France

Coordinated by Noël Challamel

ISBN: 9781848214040 • 2013 • 336 pages • USD 160.00 • ISTE-WILEY

Contents
1. Environmental, Economic and Social Context of Agro-Concretes.
Reinforced Concrete Beams, Columns and Frames 1
Mechanics and Design
Charles Casandjian, Noël Challamel, Christophe Lanos, and Jostein Hellesland

Coordinated by Noël Challamel

ISBN: 9781848214828 • 2013 • 320 pages • USD 145.00 • ISTE-WILEY

This book is focused on the theoretical and practical design of reinforced concrete beams, columns and frame structures. It is based on an analytical approach of designing normal reinforced concrete structural elements that are compatible with most international design rules, including for instance the European design rules – Eurocode 2 – for reinforced concrete structures.

Contents

1. Design at Serviceability Limit State (SLS).
2. Verification at Serviceability Limit State (SLS).

Reinforced Concrete Beams, Columns and Frames 2
Section and Slender Member Analysis
Jostein Hellesland, Noël Challamel, Charles Casandjian and Christophe Lanos

Coordinated by Noël Challamel

ISBN: 9781848215696 • 2013 • 320 pages • USD 145.00 • ISTE-WILEY

Reinforced Concrete Beams, Columns and Frames 2 deals with the fundamental aspects of the mechanics and design of reinforced concrete in general, both related to the Serviceability Limit State (SLS) and the Ultimate Limit State (ULS), whereas the current book deals with more advanced ULS aspects, along with instability and second-order analysis aspects. Some recent research results including the use of non-local mechanics are also presented.

Contents

2. Slender Compression Members – Mechanics and Design.
3. Approximate Analysis Methods.

Erosion of Geomaterials
Edited by Stéphane Bonelli, Irstea, Aix-en-Provence, France

Civil Engineering and Environmental Geomechanics Series

ISBN: 9781848213517 • 2012 • 400 pages • USD 165.00 • ISTE-WILEY

Erosion of Geomaterials analyses the problem of the erosion of geomaterials, focusing on the mechanical/physical aspect. The chapters oscillate between a phenomenological outlook that is well grounded in experiments, and an approach that can offer a modeling framework.

Contents

1. Introduction to the Process of Internal Erosion in Hydraulic Structures
8. Two-Phase Modeling of Bedload Transport.
10. Sediment Transport and Morphodynamics in Nearshore Areas.
Physical Properties of Concrete and Concrete Constituents
Jean-Pierre Ollivier, INSA Toulouse, Jean-Michel Torrenti, ENPC and Myriam Carcassès, University of Toulouse, France

Coordinated by Jacky Mazars

ISBN: 9781848213302 • 2012 • 352 pages • USD 147.00 • ISTE-WILEY

Topics covered by this title include the characterization of granular materials, the concepts of porosity and specific surface area, and the transport properties (diffusion and permeation) of concrete. Some of these topics are already covered in other general books dedicated to granular or porous materials. The objective here is to bring them together in one book by adapting them for use by concrete specialists.

ICWIM 6
Proceedings of the International Conference on Weigh-In-Motion
Edited by Bernard Jacob, Anne-Marie McDonnell, Franziska Schmidt and Cunagin Wiley

ISBN: 9781848214156 • 2012 • 560 pages • USD 245.00 • ISTE-WILEY

The proceedings of this conference provides access to current research and best practices, in an international forum for WIM technology, standards, research, policy and applications.

Geomechanics in CO2 Storage Facilities
Gilles Pijaudier-Cabot, University of Pau and Pays de l’Adour and Jean-Michel Pereira, Ecole des Ponts ParisTech, France

Civil Engineering and Environmental Geomechanics Series

ISBN: 9781848214163 • 2012 • 256 pages • USD 125.00 • ISTE-WILEY

The purpose of this book is to give an overview of the multiphysics processes occurring in CO2 storage facilities, with particular attention given to coupled geomechanical problems. The book is divided into three parts. The first part is dedicated to transport processes and focuses on the efficiency of the storage complex and the evaluation of possible leakage paths. The second part deals with issues related to reservoir injectivity and the presence of fractures and occurrence of damage. The final part of the book concerns the serviceability and ageing of the geomaterials whose poromechanical properties may be altered by contact with the injected reactive fluid.
Construction Reliability
Safety, Variability and Sustainability
Edited by Julien Baroth, Grenoble University, Denys Breysse, Bordeaux 1 University and Franck Schoefs, Nantes University, France
9781848212305 • 2011 • 368 pages • USD 132.00

Damage Mechanics of Cementitious Materials and Structures
Edited by Gilles Pijaudier-Cabot and Frédéric Dufour
9781848213401 • T2011 • 272 pages • USD 127.00

Rockfall Engineering
Edited by Stéphane Lambert and François Nicot, CEMAGREF, Grenoble, France
9781848212565 • 2011 • 464 pages • USD 195.00

Multiscale Geomechanics
From Soil to Engineering Projects
Edited by Pierre-Yves Hicher, Ecole Centrale de Nantes, France
9781848212466 • 2011 • 416 pages • USD 197.00

Plasticity of Crystalline Materials
From Dislocations to Continuum
Edited by Ioan R. Ionescu, Patrick Franciosi, Salima Bouvier and Oana Cazacu
9781848212787 • 2011 • 304 pages • USD 147.00

Self-Compacting Concrete
Edited by Ahmed Loukili, Institute for Research in Civil and Mechanical Engineering (GeM), Nantes University, France
June 2011 • 288 pages • USD 127.00

Formulation
Edited by Anne-Marie Pensé-Lhéritier, École de Biologie Industrielle, Cergy, France
9781848212596 • 2011 • 352 pages • USD 147.00

Structural Performance
Probability-based Assessment
Christian Cremona, French Ministry for Sustainable Development, France
9781848212367 • 2011 • 448 pages • USD 197.00

Organic Materials for Sustainable Construction
Edited by Yves Mouton, ORGAGEC, France
9781848212244 • 2011 • 688 pages • USD 258.00

Discrete-element Modeling of Granular Materials
Edited by Farhang Radjai and Frédéric Dubois, Mechanics and Civil Engineering Laboratory (LMGC), University of Montpellier 2, France
9781848212602 • 2011 • 448 pages • USD 205.00

Designing and Building with UHPFRC
State of the Art and Development
Edited by François Toutlemonde, IFSTTAR, Paris and Jacques Resplendino, Direction Inter-départementale des Routes Méditerranée Marseille, France
9781848212718 • 2011 • 848 pages • USD 310.00

Materials Under Extreme Loadings
Application To Penetration And Impact
Edited by Eric Buzaud, DGA, CE Gramat, Ioan R. Ionescu, University Paris 13, France and George Z. Voyiadjis, Louisiana State University, USA
9781848211841 • 2010 • 464 pages • USD 210.00

Environmental Geomechanics
Edited by Bernard Schrefler, University of Padua, Italy and Pierre Delage, Ecole Nationale des Ponts et Chaussées, Paris, France
9781848211667 • J2010 • 544 pages • USD 215.00

Advances in Computed Tomography for Geomaterials • GeoX2010
Edited by Khalid A. Alshibli, Louisiana State University and Allen H. Reed, Naval Research Laboratory, Stennis Space Center, USA
9781848211797 • 2010 • 448 pages • USD 230.00

Dynamic Behavior of Concrete and Seismic Engineering
Edited by Jacky Mazars, INPG, Grenoble and Alain Millard, CEA Saclay, France
9781848210714 • 2009 • 400 pages • USD 180.00

Mechanical Behavior of Concrete
Edited by Jean-Michel Torrenti, ENPC, Jean-Marie Reynouard, INSA de Lyon and Gilles Pijaudier-Cabot, University of Pau and Pays de l’Adour, France
9781848211780 • 2010 • 432 pages • USD 215.00

Seismic Engineering
Jacques Betbeder-Matibet
9781848210264 • 2008 • 992 pages • USD 385.00

Thermo-hydromechanical and Chemical Coupling in Geomaterials and Applications
Edited by Jian-Fu Shao and Nicolas Burlion, Polytech-Lille, France
9781848210431 • 2008 • 736 pages • USD 310.00
### Mechanics of Unsaturated Geomaterials
Edited by Lyesse Laloui, Swiss Federal Institute of Technology, Lausanne, Switzerland
9781848212664 • 2010 • 400 pages • USD 165.00

### Soil Mechanics
Roberto Nova, Milan University of Technology, Italy
9781848211025 • 2010 • 416 pages • USD 210.00

### Micromechanics of Failure in Granular Geomaterials
Edited by François Nicot, CEMAGREF, Grenoble, France and Richard Wan, University of Calgary, Alberta, Canada
9781848211285 • 2009 • 368 pages • USD 165.00

### CONCREEP-7 – Creep, Shrinkage and Durability of Concrete and Concrete Structures
Edited by Gilles Pijaudier-Cabot, EC Nantes, Bruno Gérard, OXAND and Paul Acker, Lafarge, France
9781905209507 • 2005 • 656 pages • USD 250.00

### Homogenization of Coupled Phenomena in Heterogenous Media
Jean-Louis Auriault and Christian Geindreau, Joseph Fourier University, Grenoble and Claude Boutin, ENTPE Lyon, France
9781848211612 • 2009 • 480 pages • USD 250.00

### Constitutive Modeling of Soils and Rocks
Edited by Pierre-Yves Hicher, Ecole Centrale de Nantes and Jian-Fu Shao, University of Science and Technology, Lille, France
9781848210202 • 2008 • 456 pages • USD 250.00

### Micromechanics of Granular Materials
Edited by Bernard Cambou, Ecole Centrale de Lyon, Michel Jean, LMA, Marseille and Farhang Radjai, University of Montpellier 2, France
9781848210752 • 2009 • 368 pages • USD 160.00

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From Microstructure to Macro-scale Properties
Edited by Oana Cazacu, University of Florida, Shalimar, FL, USA
9781848210479 • 2008 • 368 pages • USD 165.00
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- Monographs and multi-author books, usually between 250 and 400 pages long, deal with the fundamental, experimental and applicative aspects of each topic.

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