

PERSONAL DATA

Nome: ROCCO LAGIOIA
Home Address: [REDACTED]
Date of birth: [REDACTED]
Place of birth: [REDACTED]
Nationality: [REDACTED]
Family status: [REDACTED]
Languages: Italian, English, German, French

EDUCATION

Ph.D.	Politecnico di Milano	June 1994
D.I.C.	Imperial College of London	May 1995
Laurea	University of Bari in Structural Engineering	June 1989

TEMPORARY RESEARCH POSITIONS

1991-1993 Imperial College of London
1994-1996 research fellow at École Nationale des Ponts et Chaussées of Paris
1995-1996 senior research fellow at Imperial College of London
1997-1998 Politecnico di Milano

FULL TIME POSITIONS

1998-2001 Lecturer in Geotechnics at the University of Brescia
2001- Associate Professor in Geotechnics at the University of Brescia

SHORT TERM POSITIONS

- *Visiting professor*, Imperial College (July-August 2008)
- *Visiting professor*, ETH-Zurich (February - August 2013)

EDITORIAL BOARDS AND REVIEWS***Member of the Advisory Panel of:***

- *Géotechnique Letters* (2010-2013)
- *Géotechnique* (2011-2013)
- *Géotechnique* (2015-2017)
-

Reviews for:

- *Acta Geotechnica*
- *Canadian Geotechnical Journal*

- *Computers and Geotechnics*
- *Géotechnique*
- *International Journal for Numerical and Analytical Methods in Geomechanics*
- *International Journal of Mechanical Sciences*
- *Journal of Geotechnical and Geoenvironmental Engineering, ASCE*
- *Rivista Italiana di Geotechnica*
- *Rock Mechanics and Rock Engineering*
- *Geomechanics and Geoengineering: an international journal*

CONSULTING

- 1989-1991 Full time consulting as structural engineer
1991- Occasional consulting in foundation and excavations design

RESEARCH INTERESTS

- Constitutive modelling
- Experimental behaviour of sands, clays, soft rocks
- Numerical analyses of boundary value problems
- Design and development of laboratory equipment

RESEARCH PROJECTS AND FUNDS

- 1991-1992 European Greco-Geomaterials, D.I.S. – Politecnico di Milano, (EU funds);
1994-1996 HCM project, (EU funds);
1996-1998 “Characterization of mechanical properties and damage of natural building stones in historical monuments”, D.I.S. – Politecnico di Milano (EU funds SMT4-CT96-2130).
1998-2000 National funding agency MURST '98. “Seismic vulnerability of historical monuments”. D.I.S. - Politecnico di Milano.
1999-2001 Po River National Agency research contract “Stability of river embankments”, D.I.C. – University of Brescia.
1999-2002 National funding agency MURST '99. “Galleries in difficult conditions”, D.I.C. - University of Brescia.
2002-2003 National funding agency MURST –2001. “ Mechanical behaviour and constitutive modelling of natural clays”, D.I.C.- University of Brescia
2003-2006 Laboratory tests on the soils of Mose Project in Venice.

COMMITTIES AND MEMBERSHIPS

- Chartered engineer;

- Member of the TC22 (Indurated Soils and Soft Rocks) of ISSMFE (1995-1999);
- Member of the organizing committee of the *II International Symposium on Hard Soils-Soft Rocks*, Napoli, 12-14 Oct. 1998.
- Corresponding member of the TC105 Geo-mechanics of the ISSMGE

SEMINARS, PRESENTATIONS AND INVITED LECTURES

- Seminars at Imperial College on: Structured soil behaviour and modelling, small strain measurements, creep of sands, finite element analyses of footing on structured soils
- Seminar at École Nationale des Ponts et Chaussées, Paris (1994) on: Behaviour of structured soils
- International Symposium on Hard Soils-Soft Rocks, Napoli 12-14 Oct. 1998: paper presentation
- British Geotechnical Society, London (12/5/1999): Numerical analyses of boundary value problems involving structured soils
- Professional course for laboratory technicians “Modern developments in laboratory testing”, III Corso per Tecnici di Laboratorio “Argomenti di Geotecnica Stradale”, Associazione Laboratori Geotecnici Italiani, Brescia 11 April 2000
- Key note lecture at the V National Meeting of Geotechnical Researchers (Convegno Nazionale dei Ricercatori di Ingegneria Geotecnica), Bari, 15-16 September 2006, “Stability of superficial foundations and mechanical behaviour of soils” (in Italian).
- Seminar at ETH – Zurich (30/05/2013)
- Presentation at Congress (11/07/2013): CERMODEL 2013, Modelling and simulation meet innovation in ceramics technology, Trento, July 10-12, 2013
- Seminar at Cambridge University (18/07/2013)

LIST OF PUBLICATIONS**International journals and peer reviewed conference proceedings**

1. R. Lagioia (1994). "Comportamento meccanico dei terreni cementati naturali: indagine sperimentale ed interpretazioni teoriche". Ph.D. thesis Milan University of Technology.
2. R. Lagioia & R. Nova (1993). "A constitutive model for soft rocks." *Proc. Int. Symp. Geotechnical Engineering of Hard Soils - Soft Rocks*, Atene 20-23 Settembre 1993. A. Anagnostopoulos, F. Schlosser, N. Kalteziotis e R. Frank editori (Balkema, Rotterdam, 1993), 625-632.
3. R. Lagioia & R. Nova (1995). "An experimental and theoretical study of the behaviour of a calcarenite in triaxial compression". *Géotechnique* **45**, No.4, 633-648.
4. R. Lagioia (1996). "Comportamento meccanico di una calcarenite di Gravina di Puglia. *Rivista Italiana di Geotecnica* , N.4 1996, 69-84.
5. R. Lagioia, A.M. Puzrin & D.M. Potts (1996). "A new versatile expression for yield and plastic potential surfaces". *Computers & Geotechnics*, Vol. 19, No.3, 171-191.
6. R. Lagioia & R. Nova (1997). Discussion *Géotechnique* **47**, No.4, 883-885: R. Lagioia & R. Nova (1995) "An experimental and theoretical study of the behaviour of a calcarenite in triaxial compression" *Géotechnique*, **45**, No.4, 633-648.
7. R. Lagioia & D.M. Potts (1997). "Stress and strain non-uniformities in triaxial testing of structured soils". *Proc. 6th Int. Symp. on Numerical Models in Geomechanics - NUMOG VI*, Montreal, Quebec, Canada, 2-4 July 1997, 147-152
8. R. Lagioia (1998). Discussion, *Géotechnique* **48**, No.4, 575-578: J.M. PESTANA & A.J. WHITTLE (1995) "Compression model for cohesionless soils" *Géotechnique* **45**, No.4, 661-631.
9. R. Lagioia (1998). "Creep and apparent preconsolidation in carbonate soils". *Proc. II Int. Symp. on Hard Soils-Soft Rocks, Naples*, 12-14 Oct. 1998, A. Evangelista & L. Picarelli eds, Balkema Rotterdam, vol. 2: 615-622.
10. R. Lagioia, J.B. Burland & P. Delage (1998). "Influence of pore water on the mechanical behaviour of a calcarenite". *Proc. II Int. Symp. on Hard Soils-Soft Rocks, Naples*, 12-14 Oct. 1998, A. Evangelista & L. Picarelli eds, Balkema Rotterdam, vol. 2: 623-628.
11. R. Lagioia, J.B. Burland & P. Delage (1998). "Pre-yield behaviour of the Gravina calcarenite at small strains.". *Proc. II Int. Symp. on Hard Soils-Soft Rocks, Naples*, 12-14 Oct. 1998, A. Evangelista & L. Picarelli eds, Balkema Rotterdam, vol. 2: 629-636.
12. P. Fontana, R. Lagioia & R. Nova (1998). "Subsidence and wellbore stability during the excavation of oil wells". *Proc. II Int. Symp. on Hard Soils-Soft Rocks, Naples*, 12-14 Oct. 1998, A. Evangelista & L. Picarelli eds, Balkema Rotterdam, vol.1: 519-528.
13. F. Cotecchia, F. Santaloia, R. Lagioia & M.R. Coop (1998). "An investigation of the behaviour of bored piles in pyroclastic sands". *Proc. Int. Symp. on Problematic Soils, Ie-Tohoku Sendai (Japan)* 28-30 Oct. 1998, Moroto & Mitachi eds, Balkema Rotterdam, vol. 1, pgg 715-719.
14. R. Lagioia & D. M. Potts (1999). "The behaviour of shallow foundations on structured soils". *Rivista Italiana di Geotecnica*, vol.4, 52-64,1999.
15. Coviello, A., Lagioia, R. & Nova, R., 2005. On the measurement of the tensile strength of soft rocks. *Rock Mechanics and Rock Engineering*, 38 (4), 251-273.

- 16.R. Lagioia, Alex Sanzeni & F. Colleselli, 2006. “Air, water and vacuum pluviation of sand specimens for the triaxial apparatus”. *Soils & Foundations*, vol 46, No.1, 61-67.
- 17.Lagioia, R. & Potts, D.M., 2011. “Ground conditions due to tunnelling in hard soils and weak rocks”. *XV ECSMGE, Athens., Anagnostopoulos A., Pachakis, M. & Tsatsanifos, C. eds*, 1665-1670
- 18.Lagioia, R., Colleselli, F. & Chiamone, T (2011). “Creep behaviour in isotropic and k_0 compression of the Venice Lagoon sand”. *Proc. 5th Int. Symp. Deformation Characteristics of Geomaterials, Seoul, Korea, 1-3 Sept. 2011*, 600-606.
- 19.Zambelli, C., di Prisco, C. & Lagioia, R., 2012. “Strain accumulation in dense sands due to shear stress cycles”. *Geomechanics and Geoengineering: an international journal*, vol. 7, No1, 1-14. DOI:10.1080/17486025.2011.579186
- 20.Panteghini, A. & Lagioia, R, 2013. A single numerically efficient equation for approximating the Mohr-Coulomb and the Matsuoka-Nakai failure criteria with rounded edges and apex. *International Journal for Numerical and Analytical Methods in Geomechanics*. DOI: 10.1002/nag.2208
- 21.Panteghini, A. & Lagioia, R, 2013. A fully convex reformulation of the original Matsuoka-Nakai failure criterion and its implicit numerically efficient integration algorithm. *International Journal for Numerical and Analytical Methods in Geomechanics*. DOI: 10.1002/nag.2228
- 22.Panteghini, A. & Lagioia, R, 2013. The influence of the plastic potential on plane strain failure . *International Journal for Numerical and Analytical Methods in Geomechanics*. DOI: 10.1002/nag.2236.
- 23.Lagioia, R., Panteghini, A. & Puzrin, A.M. 2014. The “I3” generalization of the Galileo-Rankine tension criterion. Submitted for publication in the *Proceedings of the Royal Society, London*, vol, 470, 1-23, doi: 10.1098/rspa.2014.0568
- 24.Lagioia, R. & Panteghini, A. 2016. On the existence of a unique class of yield and failure criteria comprising Tresca, von Mises, Drucker–Prager, Mohr–Coulomb, Galileo–Rankine, Matsuoka–Nakai and Lade–Duncan. *Proceedings of the Royal Society A, London*, vol. 472, ISSN: 1364-5021, doi: 10.1098/rspa.2015.0713
- 25.Lagioia R. & Panteghini A. , 2017. Accounting for specific failure criteria in the slip-line method for plane strain problems. *Géotechnique Letters*, vol. 7, p. 1-6, ISSN: 2045-2543, doi: 10.1680/jgele.17.00014
- 26.Panteghini, A. & Lagioia, R. 2017. An extended modified Cam-Clay yield surface for arbitrary meridional and deviatoric shapes retaining full convexity and double homothety. *Géotechnique*. DOI:10.1680/jgeot.17.P.016
- 27.Panteghini, A. & Lagioia, R., 2018. An approach for providing quasi-convexity to yield functions and a generalized implicit integration scheme for isotropic constitutive models based on 2 unknowns. *International Journal for Numerical and Analytical Methods in Geomechanics*. DOI: 10.1002/nag.2767.

Key-note lectures and short communications

1. R. Lagioia & R. Nova (1992). "Comportamento meccanico di una calcarenite in prove triassiali con varie pressioni di confinamento". *Atti riunione Gruppo Nazionale di Coord. per gli Studi di Ingegneria Geotecnica del CNR, Attività di ricerca 1991-1992*, 195-198, Roma 1992.
2. R. Lagioia & R. Nova (1993). "Modellazione matematica di rocce tenere". *Atti riunione Gruppo Nazionale di Coord. per gli Studi di Ingegneria Geotecnica del CNR, Attività di ricerca 1992-1993*, 203-206, Roma 1993.
3. R. Lagioia & R. Nova (1993). "Un modello costitutivo del comportamento meccanico di una calcarenite bioclastica di Gravina di Puglia". *Atti riunione Gruppo Nazionale di Coord. per gli Studi di Ingegneria Geotecnica del CNR, Attività di ricerca 1992-1993*, 199-202, Roma 1993.
4. R. Lagioia & D.M. Potts (1995). "Analisi agli elementi finiti di una fondazione superficiale su di una calcarenite debolmente cementata.". *Atti riunione Gruppo Nazionale di Coord. per gli Studi di Ingegneria Geotecnica del CNR, Attività di ricerca 1994-1995*, 221-224, Roma 1995.
5. R. Nova & R. Lagioia, (1996). "Soft Rocks: behaviour and modelling". *Key-note Lecture Eurock '96 ISRM, Int. Symp. on Prediction and Performance in Rock Mechanics and Rock Engineering*, Torino 2-5 Sept 1996.
6. S. Aversa & R. Lagioia (1998). "Model requirements and design criteria for softs rocks". Panel Report, *Proc. II Int. Symp. on Hard Soils-Soft Rocks, Naples*, 12-14 Oct. 1998, A. Evangelista & L. Picarelli eds, Balkema Rotterdam, vol.3, 1483-1497.
7. F. Colleselli, G. Cortellazzo, C. Jommi & R.Lagioia. "Controlli e misure durante e dopo la costruzione delle arginature nel delta del Po". *Sviluppi nell'esecuzione e nell'impiego delle indagini geotecniche*, XX Convegno Nazionale di Geotecnica, Parma, 22-25 Sett. 1999, Pàtron Editore, Bologna, pgg 435-443
8. R. Lagioia (2006). *Analisi di stabilita' di fondazioni superficiali in relazione al comportamento meccanico dei terreni. Fondazioni superficiali e profonde – Key-note lecture V Convegno Nazionale dei Ricercatori di Ingegneria Geotecnica, Bari, 15-16 settembre 2006*, Helvelius ed., vol. 2, 13-83.