

# Daria Scerrato

International Research Center M&MoCS  
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## Academic Degree:

2008 Master Degree in Environment Engineering (*cum laude*), SAPIENZA Università di Roma (Italy).

2011-2014 Ph.D. in Theoretical and Applied Mechanics, SAPIENZA Università di Roma (Italy), in joint supervision with INSA Lyon (France). Thesis Title: *Effect of micro-particle addition on frictional energy dissipation and strength of concrete: Experiments and modelling*

## Current Position:

2014 to present **Research Fellow** at Università degli studi dell'Aquila, International Research Center M&MoCS, L'Aquila, Italy

## Courses and Seminars Attended:

2012 *Tecniche di omogeneizzazione*, Prof.ssa Micol Amar;

2012 *N-th Gradient continua: general theory and microscopic structures. Perspectives in wave propagation*, Prof. Francesco dell'Isola;

2012 *Continuum Mechanics and Second Gradient Materials*, Dr Manuel Ferretti;

2012 *Teoria dell'omogeneizzazione*, Prof. Claude Boutin;

2013 *Analytical Continuum Mechanics and Applications*, Prof. Francesco dell'Isola;

2012 *Workshop on SECOND GRADIENT and GENERALIZED CONTINUA*, Professors Samuel Forest and Francesco dell'Isola;

2012 *Second Sperlonga Summer School on Mechanics and Engineering Sciences "Mechanics and Thermodynamics of Soft Active Matter"*, Professors. Antonio Di Carlo and Ignacio Pagonabarraga;

2013 *Workshop on New Trends in Continuum Mechanics*, Francesco dell'Isola;

2013 *4th Canadian Conference on Nonlinear Solid Mechanics (CanCNSM2013)*, Prof. Marco Amabili;

2013 *Third Sperlonga Summer School on Mechanics and Engineering Sciences "Dynamics, Stability and Control of Flexible Structures"*, Professors Angelo Luongo and Francesco dell'Isola;

2014 *EUROMECH Colloquium 563*, Francesco dell'Isola and Samuel Forest

## Other Activities:

2012– 2015 **Internship** attesting laboratory: “Laboratorio Ufficiale Prove Materiali e Strutture” of University of L’Aquila (Italy);

2012– 2014 **Internship** attesting laboratory: “LGCIE” INSA Lyon (France);

## Research Fields of Scientific Interest:

Mechanics of solids and structures and dissipation modelling. More specifically: Modelling of elastic micro structured solids. Porous Materials, applications to the concrete.

## Publications:

1. Daria Scerrato, Ivan Giorgio, Angela Madeo, Ali Limam and Felix Darve, A simple non-linear model for internal friction in modified concrete, *International Journal of Engineering Science* (2014).
2. K. Enakoutsa, D. Del Vescovo and D. Scerrato. Combined polarization field gradient and strain field gradient effects in elastic flexoelectric materials, *Mathematics and Mechanics of Solids* (in press).
3. A. Madeo, A. Della Corte, I. Giorgio, D. Scerrato. Modeling and designing micro- and nano- structured metamaterials: towards the application of exotic behaviors, *Mathematics and Mechanics of Solids* (in press).
4. D. Scerrato, I. Giorgio, A. Della Corte, A. Madeo, A. Limam. A micro-structural model for dissipation phenomena in the concrete. *Int. J. Numer. Anal. Meth. Geomech* (under first revision).
5. Placidi L., Giorgio I., Della Corte A. and Scerrato D. Euromech 563 Cisterna di Latina 17–21 March 2014 Generalized continua and their applications to the design of composites and metamaterials: A review of presentations and discussions. *Mathematics and Mechanics of Solids DOI: 10.1177/1081286515576948*

## Chapters:

1. dell’Isola, F., Andreaus U., Cazzani, C., Perego, U., Placidi, L., Ruta, G., Scerrato, D. On a debated principle of Lagrange’s analytical mechanics and on its multiple applications. In: (Eds.): U. Andreaus, F. dell’Isola, R. Esposito, S. Forest, G. Maier, and U. Perego, The complete works of Gabrio Piola, volume I. *Springer*, (2014).
2. dell’Isola, F., Andreaus U., Placidi, L., Scerrato, D. About the fundamental equations of the motion of bodies whatsoever, as considered following the natural their form and constitution. In: (Eds): U. Andreaus, F. dell’Isola, R. Esposito, S. Forest, G. Maier, and U. Perego, The complete works of Gabrio Piola, volume I. *Springer*, (2014).

## Conference and Seminar Presentations:

Canadian Conference on Nonlinear Solid Mechanics (CanCNSM 2013), Montréal, Canada, July 23–26, 2013. Conference Abstract:

Title 1: *Numerical simulation of remodeling of bone tissue and bio-resorbable material mixture with voids under different loads;*

Title 2: *The influence of different geometries of matrix/scaffold on the response of a bone and resorbable material mixture with voids.*

Conference WCCM-ECCM-ECFD, Barcellona, Spain, 2014.

Conference Abstract:

Title 1: *A continuum model of cement-based materials with internal frictional dissipation;*

Title 2: *Experimental behavior of concrete with micro-particles under cyclic loading and effects due to frictional energy dissipation.*

V International Conference on Computational Methods for Coupled Problems in Science and Engineering, Ibiza, Spain, 17–19 June, 2013.

Short paper: *A continuum model of a mixture of bone tissue and bio-resorbable material for simulating mass density redistribution in a 2D sample.*

## Conferences and Workshops organized:

Symposium at International Research Center M&MoCS on “Mechanics of Fractures and Second Gradient Theory”, Cisterna di Latina, July 4-8 2011.

First Sperlonga Summer School on Mechanics and Engineering Sciences, Sperlonga (Italy), 26-30 September 2011. “Atomistic and continuum descriptions of microstructures”.

Workshop at International Research Center M&MoCS on “Second Gradient and Generalized Continua”. Coordinators: Francesco dell’Isola (Sapienza Università di Roma), Samuel Forest (Paris, F). Cisterna di Latina, March 12-16, 2012.

Second Sperlonga Summer School on Mechanics and Engineering Sciences, Sperlonga (Italy), 24-28 September 2012. “Mechanics and Thermodynamics of Soft Active Matter”.

Third Sperlonga Summer School on Mechanics and Engineering Sciences, Sperlonga (Italy), 23-27 September 2013. “Dynamics, Stability and Control of Flexible Structures”.

Euromech-Colloquium 563 “Generalized Continua and their Application to the Design of Composites and Metamaterials”, Cisterna di Latina (LT), (Italy), 17-21 March 2014.