

Xavier (Javier) Oliver (Short CV)

A. PERSONAL DATA

		DATE CV	27-01-2022
Name and surname	Xavier (Javier) Oliver Olivella		
Age	69		
Investigator ID number	Researcher ID	H-2204-2015	
	Orcid Code	0000-0001-8717-1483	

A.1. Professional situation

Organism	Polytechnic University of Catalonia (BarcelonaTech/UPC)		
Dpt./Centers	Civil and Environmental Engineering (DECA)/Civil Engineering School of Barcelona (ETSECCPB) /International Center for Numerical Methods in Engineering (CIMNE)		
Address	Campus Nord UPC, Edifici C-1, C/Jordi Girona Salgado 1-3 , 08034 Barcelona (Spain)		
Contact	Telephone: 93 4016490	e-mail: xavier.oliver@upc.edu oliver@cimne.upc.edu	Web page: http://oliver.rmee.upc.edu/xo
Professional status	Full profesor	Starting date	01/10/1990
UNESCO code	220502 – Continuum Mechanics		
Key words	Continuum Mechanics, Computational Solid Mechanics, Fracture Mechanics, Computational Material Design		

A.2. Academic records

MSc/PhD grades	University	Year
PhD Civil Engineering	Technical University of Catalonia (UPC)	1982
MSc Civil Engineering	Technical University of Valencia	1976

A.3. General indicators for the quality of the scientific production

- Total number of citations: 8153 (Scopus), 15017 (Google Scholar)
- Average citations per year throughout the last five years: 770 (Scopus)
- h-index: 40 (Scopus), 51 (Google Scholar)
- Number of six-year consecutive terms of high-quality investigation: 5 (Spanish Government, UPC)
- Number of five-year terms of high-quality teaching: 6 (Spanish Government, UPC)

B. Brief summary of the scientific work

His research has developed around Computational Mechanics and Simulation Sciences in engineering fields. In this context he has made research in the following areas:

- **Numerical modeling and simulation of materials in terms of mechanical failure.**
A traditional line in his trajectory, for which he is well recognized by the international community in the field. He has developed the so-called "**Strong discontinuity approach**" to material failure, a modern version and extension of computational Fracture Mechanics to general computational material failure problems, which has gained considerable credit in the computational fracture mechanics community.
- **Particle finite element methods to model granular material flows.**
An innovative research line applying specific particle-based numerical methods, for material behavior modeling, in mining and powder compaction metallurgy processes.
- **Computational methods for contact-friction problems.**
A new contact mechanics paradigm "**the Contact-domain Method**" in the fields of Computational Contact Mechanics and Domain Decomposition Methods.
- **Computational Design of Engineering Materials and Metamaterials.**
Inspired by the research results and his experience in the aforementioned research lines, in 2012 he opened a new research line, which focuses on achieving industrial and social benefits from application of Computational Mechanics methods: i.e. Computational Design of Metamaterials. This involving an appropriate balance of

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three Computational Mechanics areas: **Multiscale modelling of materials**, **Topology optimization** and **High-Performance Reduced Order Modelling (HPROM)**.

In this context he was granted, in 2013, by the European Research Council (ERC), with one of the very prestigious “Advanced Grants”: the Advanced Grant “**COMP-DES-MAT**”— **Advanced tools for computational design of engineering materials**”.

Subsequently, and as a continuation oriented to application of the results of the previous Advance Grant, he has been granted two Proof of Concept (PoC) Grants by the same ERC: in 2018 the PoC Grant **CATALOG -- Computational catalog of multiscale materials: a plugin library for industrial finite element codes**— and, in 2019, the PoC Grant **METACOUSTIC -- Computational design and prototyping of acoustic metamaterials for tailored insulation of noise**.

C. MOST RELEVANT SCIENTIFIC MERITS

C.1. Publications

5 most-cited publications (number of cites according to Scopus at 27-01-2022)

- Lubliner, J., Oliver, J., Oller, S., Oñate, E., A plastic-damage model for concrete, (1989), International Journal of Solids and Structures, 25 (3), pp. 299-326. Cited 2494 times.
- Simo, J.C., Oliver, J., Armero, F., An analysis of strong discontinuities induced by strain-softening in rate-independent inelastic solids (1993), Computational Mechanics, 12 (5), pp. 277-296. Cited 665 times.
- Oliver, J., Modelling strong discontinuities in solid mechanics via strain softening constitutive equations. Part 1: Fundamentals (1996) International Journal for Numerical Methods in Engineering, 39 (21), pp. 3575-3600. Cited 384times.
- Faria, R., Oliver, J., Cervera, M. A strain-based plastic viscous-damage model for massive concrete structures, (1998) International Journal of Solids and Structures, 35 (14), pp. 1533- Cited 392 times.
- Oliver, J., A consistent characteristic length for smeared cracking models, (1989) International Journal for Numerical Methods in Engineering, 28 (2), pp. 461-474. Cited 336 times.

C.2. Competitive research projects

Relevant international research grants:

- (2013-2017) ERC-Advanced Grant. Proposal n° 320815, European Research Council, Advanced tools for computational design of engineering materials (COMP-DES-MAT), Principal Investigator (2.372.973€.)
- (2018-2019) ERC- Proof of Concept Grant. Proposal n° 779611. ERCEA European Research Council Executive Agency). Computational catalogue of multiscale materials: a plugin library for industrial finite element codes (CATALOG). Principal Investigator
- (2019-2020) ERC- Proof of Concept Grant. Proposal n° 874481. ERCEA European Research Council Executive Agency). Computational design and prototyping of acoustic metamaterials for tailored insulation of noise (METACOUSTIC). Principal Investigator

C.3. Honors and awards:

- 2002, Fellow of the International Association of Computational Mechanics, (IACM)
- 2006, Member of the Royal European Academy of Doctors (Spain)
- 2008, International Award of the Argentinean Association for Computational Mechanics (AMCA)
- 2008, IACM Computational Mechanics Award, of the International Association for Computational Mechanics (IACM)
- 2012, Advanced Grant (European Research Council) (2013-2017)

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- 2018 UPC (Polytechnic University of Catalonia) Award to the innovation initiative for university teaching
- 2020 Gauss-Newton Medal (Congress Medal Award) granted by the International Association for Computational Mechanics (IACM). IACM highest distinction.

C.4. Professional and academic activities:

Editorial boards:

- Since 1985, Revista Internacional de Métodos Numéricos en Ingeniería, Elsevier, (Associate Editor)
- Since 1995 Archives of Computational Methods in Engineering, Springer-Verlag
- Since 1998 International Journal for Numerical Methods in Engineering
- Since 2004, Computers and Concrete
- Since 2011, Computer Methods in Applied Mechanics in Engineering
- (2013-2019), International Journal for Numerical and Analytical Methods in Geomechanics
- Since 2014, Computational Particle Mechanics
- Since 2014, Advanced Modeling and Simulation in Engineering Sciences

Community services

- (1995-1998) Member of the Executive Council, Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE)
- since 1997, Member of the Executive Board, Spanish association for numerical methods in engineering (SEMNI)
- since 1998, Member of the Advisory Council, Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE)
- (2002-2009), Deputy Chairman (Vice-presidente), Spanish association for numerical methods in engineering (SEMNI),
- since 2009, Member of the General Council, International Association for Computational Mechanics (IACM)
- 2009-2017, Chairman (Presidente) of the Spanish Association for Computational Mechanics (SEMNI)

University services

Vice-dean. Civil Engineering School of Barcelona (ETSECCPB), (1994-1996)

C.5. Plenary and semi-plenary lectures in scientific Conferences

- 1 Plenary lecture at the 3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP_2019), Crete (Greece)
- 1 Semi-plenary lecture at the VI International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC_2019), Braunschweig (Germany)
- 1 Semi-plenary lecture at the World Conference of Computational Mechanics (WCCM 2018), New York (USA)
- 12 Plenary lectures at Int. Conf. on Computational Plasticity fundamentals and applications, COMPLAS 1991, 1995, 1997, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, 2021 (Barcelona, Spain)
- 4 Plenary lectures at MECOM/ENIEF Asociación Argentina de Mecánica Computacional (AMCA), 1994, 2008, 2010, 2016 (Argentina)
- 1 Plenary lecture at the 56th Brazilian Conference on Concrete, 2015 (Bonito, Brazil)
- 1 Plenary lecture at the First PanAmerican Conference on Computational Mechanics, (PANACM_2015), (Buenos Aires, Argentina)
- 2 Plenary lectures at, Computational Modeling of Concrete Structures, EUROOC_2010, EUROOC_2014,(Austria)
- 1 Plenary lecture at the 13th International Conference on Fracture and Damage Mechanics, 2014 (Azores, Portugal)

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- 1 Plenary lecture at the 37th Symposium of the International Association for Bridge and Structural Engineering (IABSE), Madrid 2014
- 1 Plenary lecture at the V Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED 2013), Ibiza, Spain 2013
- 1 Semi-plenary lecture at IV European Conference on Computational Mechanics, 2012 (Vienna, Austria)
- 1 Plenary lecture at GIMC-2010, XVIII Convegno Italiano di Meccanica Computazionale, 2010, (Siracusa, Italy)
- 1 Semi-plenary lecture at IV European Conference on Computational Mechanics, 2010 (Paris, France)
- 3 Plenary lectures at South-American Congress on Computational Mechanics, 2002, 2005, 2010 (Argentina)
- 1 Plenary lecture at Congresso de Metodos Computacionais em Engenharia 2004 (Lisboa, Portugal)
- 1 Semi-plenary lecture at Vth World Congress on Computational Mechanics, 2004 (Beijing, China)
- 1 Plenary lecture at IV ECCOMAS Conference on Numerical Methods in Engineering, 2004 (Jyvaskula, Finland)

C.6. Organization of conferences and scientific events

Conference chairman:

- 1st, 2nd, 3rd and 4th International Conference on Computational Fracture and Failure of Materials and Structures, CFRAC 2007 Nantes (France), CFRAC 2011, Barcelona (Spain), CFRAC 2013 (Prague, Check Republic), CFRAC 2015 (Paris, France), CFRAC 2017 Nantes (France)
- ECCOMAS European Conference on Computational Mechanics ECCM V (jointly with WCCM XI and ECFD VI) in Barcelona, 2014

Member of the organizing and program committee:

- Congreso de Métodos Numéricos en Ingeniería: 2004, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019 (Spain and Portugal)

Member of the scientific committee:

- Int. Conf. on Computational Plasticity: fundamentals and applications COMPLAS 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019 Barcelona, Spain
- Int. Conf. on Computational Modeling of Concrete Structures EURO-C 1997, 2000, 2003, 2006, 2010, 2014 (Austria)
- European Conference on Computational Mechanics ECCM 2010 Paris (France)
- International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP_2022), Crete (Greece)

C.7. Summary of scientific works

- 3 Books
- 24 Monographs
- 117 papers in JCR indexed journals (ORCID)
- 9 papers in other peer reviewed Journals
- 12 Book chapters
- 190 papers in Conference proceedings
- 24 advised doctoral theses