



Part A. PERSONAL INFORMATION

CV date

09/10/2022

First name	Antoni		
Family name	Cladera Bohigas		
Gender (*)	Male	Birth date (dd/mm/yyyy)	21/08/1975
ID number	43.054.497S		
e-mail	antoni.cladera@uib.eu	URL Web: personal.uib.eu/antoni.cladera	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-7308-8240	

(*) Mandatory

A.1. Current position

Position	Full professor		
Initial date	19/03/2019		
Institution	Universitat de les Illes Balears		
Department/Center	Industrial and Construction Engineering		
Country	Spain	Teleph. number	+34 971.17.1378
Key words	Structural engineering; reinforced concrete; shear strength; assessment; strengthening; shape memory alloys; codes.		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
2007-2019	Associate professor/Universitat de les Illes Balears/Spain
2003-2007	Lecturer (collaborator professor)/ Universitat de les Illes Balears/Spain
2001-2003	Lecturer (assistant professor)/ Universitat Politècnica de Catalunya/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Phd in Construction Engineering	Universitat Politècnica de Catalunya	2003
Civil Engineer (MsC and grade)	Universitat Politècnica de Catalunya	1999

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Dr. Cladera scientific contributions are related to structural engineering with two main focus during last 10 years. The first one is the development, altogether with Prof. Mari's group at UPC, of a mechanical model for the shear strength prediction of reinforced and prestressed concrete elements, validated for steel, FRP reinforcement, rectangular and T- cross sections, fiber reinforced concrete and fatigue. More recently the model has been preliminary extended for corrosion damaged members. The main contribution of this model is to highlight the importance of the compression zone in the shear resisting actions. This work has been disseminated through more than 15 papers in JCR indexed journals. His second research focus is the application of shape memory alloys (SMAs) in structural engineering, with emphasis on strengthening. He has published 8 papers in JCR indexed journals in this field. Some of these alloys are currently being used in real construction projects, especially in center Europe, with more than 50 strengthening carried out. Dr. Cladera, and his team, is one of the most active groups from all the world in this topic. The research on these two fields has been funded by 6 research projects for a total amount of 725.227€.

He has carried out research stays at the University of Toronto (Canada) and at EMPA (Swiss Federal Laboratories for Materials Science and Technology). He is member of different specialized international networks, for example the working group WP 2.2.1 'Shear in beams' of the fib and the ACI/ASCE Committee 445 'Shear and torsion'.

Dr. Cladera has collaborated with different private companies and public institutions from Spain in terms of technology transfer, with more than 25 contracts. This technology transfer activity was awarded with a six-year positive evaluation (period 2004-2009) in the unique call of this type in Spain. He has also collaborated in the Spanish Structural Concrete Code (2008) and participated in the procedures for updating the shear strength models in Eurocode 2 and ACI 318-19. He is a co-inventor of the patent “Method for shear or punching active strengthening in structural resistant members, and its system”.

He co-founded, with Dr. Ribas, the YouTube teaching channel '[Ingenia](#)', specialized in structural engineering, which has accumulated more than 1,200,000 views and 14,700 subscriptions, most of them from professionals looking for continuous training.

He has extensive experience in academic management, currently being the deputy director of the Department of Industrial Engineering and Construction. Previously, he held the position of Associate Vice-Rector for University Infrastructures (2008-2012) and Deputy Director of the Physics Department (2007-2008). He has also managed associations and initiatives outside the university: he is the Vice-President of the Spanish Association of Structural Engineering (ACHE), a meeting point between engineers and architects from the structural engineering sector and the academic world. He also was a founding member of Engineering Without Borders (Balearic Islands), organization that he led (2007-2012). He has served as a civil engineer in Guinea-Conakry, Niger, Togo, India, Paraguay, El Salvador and East Timor.

Regarding the training of young researchers, Dr. Cladera has been the director of the PhD program in Physics at UIB (2008-2021), a multidisciplinary and transversal program with students with backgrounds in physics and/or engineering. In addition, he has been the director of 3 doctoral theses, two of them in the Construction Engineering program at UPC (Youssef Choulli and Dr. Carlos Ribas) and one at UIB (Dr. Joan Rius). Dr. Choulli currently works in private companies (Canada, France, Morocco) while Dr. Joan Rius works as a specialized civil engineer, in the public administration, supervising maintenance and conservation works on roads and structures. Dr. Ribas, co-PI of this proposal, is a university professor at the UIB. Dr. Ribas and Dr. Cladera are now supervising the PhD thesis of Sandra del Rio.

Also related to his contributions to the training of young researchers, Dr. Cladera has been an expert (2014-2016) in the Academia program (ANECA), a member of the evaluation committee (2019) for the Juan de la Cierva program, and external reviewer of Cofund application for the program Empa postdocs-II at Empa.

Dr. Cladera is the principal investigator of [ConStruct](#) research group. The group was created by himself after arriving at UIB, and it has 5 full time researchers and 7 collaborators. It is a consolidated group at UIB, which has received funds from competitive projects, without interruption, since 2007. During these years Dr. Cladera has also collaborated in publishing activities, being a member of the Editorial Advisory Board of “Structural Concrete” (fib journal – JCR indexed) and a member of the Editorial Board of “Hormigón y Acero” (ACHE journal, recently included in the Expanded Science Citation Index).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions – maximum of 10 relevant papers of last 10 years)

Frontera, A., **Cladera, A.** (2022). Long-term shear strength of RC beams based on a mechanical model that considers reinforcing steel corrosion. *Structural Concrete* (accepted, in press)

Ruiz-Pinilla, J. G., **Cladera, A.**, Pallarés, F. J., Calderón, P. A., & Adam, J. M. (2022). Joint strengthening by external bars on RC beam-column joints. *Journal of Building Engineering*, 45, 103445. <https://doi.org/10.1016/j.jobe.2021.103445>

Cladera, A., Marí, A., & Ribas, C. (2021). Mechanical model for the shear strength prediction of corrosion-damaged reinforced concrete slender and non slender beams. *Engineering Structures*, 247, 113163. <https://doi.org/10.1016/j.engstruct.2021.113163>

Torres, C., Jordà, G., de Vilchez, P., Vaquer-Sunyer, R., Rita, J., Canals, V., **Cladera, A.**, Escalona, J.M. & Miranda, M. Á. (2021). Climate change and its impacts in the Balearic Islands: a guide for policy design in Mediterranean regions. *Regional Environmental Change*, 21(4), 1-19. <https://doi.org/10.1007/s10113-021-01810-1>

Ruiz-Pinilla, J. G., Montoya-Coronado, L. A., Ribas, C., & **Cladera, A.** (2020). Finite element modeling of RC beams externally strengthened with iron-based shape memory alloy (Fe-SMA) strips, including analytical stress-strain curves for Fe-SMA. *Engineering Structures*, 223, 111152. <https://doi.org/10.1016/j.engstruct.2020.111152>

Cladera, A., Montoya-Coronado, L. A., Ruiz-Pinilla, J. G., & Ribas, C. (2020). Shear strengthening of slender reinforced concrete T-shaped beams using iron-based shape memory alloy strips. *Engineering Structures*, 221, 111018. <https://doi.org/10.1016/j.engstruct.2020.111018>

Rius, J. M., **Cladera, A.**, Ribas, C., & Mas, B. (2019). Shear strengthening of reinforced concrete beams using shape memory alloys. *Construction and Building Materials*, 200, 420-435. <https://doi.org/10.1016/j.conbuildmat.2018.12.104>

Cladera, A., Marí, A., Bairán, J. M., Ribas, C., Oller, E., & Duarte, N. (2016). "The compression chord capacity model for the shear design and assessment of reinforced and prestressed concrete beams" *Structural Concrete*, 17(6), 1017-1032. <https://doi.org/10.1002/suco.201500214>

Cladera, A., Weber, B., Leinenbach, C., Czaderski, C., Shahverdi, M., & Motavalli, M. (2014). Iron-based shape memory alloys for civil engineering structures: An overview. *Construction and Building Materials*, 63, 281-293. <https://doi.org/10.1016/j.conbuildmat.2014.04.032>

Mas, B., **Cladera, A.**, Del Olmo, T., & Pitarch, F. (2012). Influence of the amount of mixed recycled aggregates on the properties of concrete for non-structural use. *Construction and*

C.2. Congress (see instructions – maximum of 10 relevant papers of last 10 years)

Cladera, A., Frontera, A., Ribas, C., Ruiz-Pinilla, J.G, Marí, A., "Mechanical model for the long-term shear strength prediction of corrosion-damaged reinforced concrete beams" *3rd CACRCS Workshop Capacity Assessment of Corroded Reinforced Concrete Structures*, 30/11/2021-03/12/2022, Oral presentation, On-line (organized by CTE-Italy, supported by fib)

Ruiz-Pinilla, J.G, Montoya-Coronado, L.A, del Río, S., Ribas, C., **Cladera, A.**, "Active confinement of beams and columns using iron-based shape memory alloys" *3rd CACRCS Workshop Capacity Assessment of Corroded Reinforced Concrete Structures*, 30/11/2021-03/12/2022, Oral presentation, On-line (organized by CTE-Italy, supported by fib)

Montoya, L., **Cladera, A.**, Ribas, C., Ruiz-Pinilla, J. "Aggregate interlock or compression chord capacity? It depends on the photogram" *ACI virtual Convention-USA*, 28/03/2021-01/04/2021, Oral presentation (on-line).

Montoya, L.; Ruiz-Pinilla, J.; Ribas, C.; **Cladera, A.** "Shear strengthening using external Fe-SMA strips". "SMAR 2019 - 5th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures", Potsdam (Germany) 2019. Oral presentation

Ruiz-Pinilla, J.; Montoya, L.; Ribas, C.; **Cladera, A.**, "Numerical modelling of reinforced concrete beams strengthened in shear by Fe-SMA strips". *CoRASS 2019 - Third International Conference on recent advances in nonlinear design, resilience and rehabilitation of structures*, Coimbra (Portugal), 2019. Oral presentation.

Cladera, A.; Rius, J.; Ribas, C. "Shear strengthening of RC members using SMAs. Towards a more ductile shear failure" *ACI Spring Convention*, Detroit (USA), 2017. Oral presentation.

Ribas, C.; **Cladera, A.**; Rius, J.; Mas, B. "A thought on the shear strength in concrete T-beams (in Spanish)". VII Congreso Internacional de Estructuras de ACHE, A Coruña (Spain), 2017. Oral presentation.

Rius, J.; **Cladera, A.**; Ribas, C.; Mas, B. "Active shear strengthening of RC beams using shape memory alloys". *SMAR 2017 – 4th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Struct.*, Zurich (Switzerland), 2017. Oral presentation.

Cladera, A.; Marí, A.; Bairán, J. "One-way Shear Design Method Based on a Multi-Action Model" In Hot Topic Session II: New One-Way Shear Equations for the 318 Building Code, Is It Time? *Spring ACI Concrete Convention*, Milwaukee (USA), 2016. Invited presentation.

Mas, B.; **Cladera, A.**; Ribas, C.; Oller, E. "Ductile shear failure in RC beams reinforced with pseudoelastic Ni-Ti spirals". *SMAR2015 - The 3rd Conference on Smart Monitoring, Assessment and Rehabilitation of Structures*, Antalya (Turkey), 7-9 September 2015. Oral presentation: Mirko Ros Medal (award to best paper in monitoring and smart structures).

C.3. Research projects (see instructions – relevant last 10 years)

PID2021-123701OB-C22: "Resilience of existing reinforced concrete infrastructures under deterioration and climate change risks (RESTART-R)". 1/09/2022-31/08/2025. Pls: **Antoni Cladera**, C. Ribas. Proyectos de Generación de Conocimiento – Programa estatal para Impulsar la Investigación. Approved (initial resolución), amount: 158,026€

PDR2020/39: "Development of a strengthening technology for bending based on iron-based shape memory alloys (Fe-SMA), optimized for its use with cyclic loads, for existing concrete touristic infrastructures". 1/12/2021-30/10/2024. Pls: **Antoni Cladera**; Joan Torrens. Projectes de recerca 20-24. Govern de les Illes Balears. Approved, amount: 106,321€

RTI2018-099091-B-C22: "Continuity of hollow core slab structural floors using shape memory alloys to improve the sustainability and safety of precast concrete infrastructures, MAPREJOINT-SP2", 1/1/2019-30/09/2022. Pls: **Antoni Cladera**; Carlos Ribas. UIB (coordinated with UPV). Programa Estatal de I+D+I Orientada a los Retos de la Sociedad. Ministerio de Ciencia, Innovación y Universidades. Amount: 164,560.00 €

Leonardo Fellowship: "Shear strengthening of full scale beams using iron based shape memory alloys", 15/09/2008-30/03/2020, PI: **Antoni Cladera**. BBVA Foundation. 35,000 €.

BIA2015-64672-C4-3-R: "Development of strengthening techniques with advanced materials for concrete structures and their mechanical behaviour models to extend their lifetime", 01/01/2016-31/12/2019. Pls: **Antoni Cladera** and Carlos Ribas, Universitat de les Illes Balears (coordinated with 3 other universities: UPC, UPV, UdC). Ministerio de Economía y Competitividad (MINECO) and FEDER. Amount: 118,580 €.

C.4. Contracts, technological or transfer merits (see instructions – last 10 years)

"Contrato de asesoramiento científico o técnico entre Club de Mar-Mallorca y la Fundació Universitat-Empresa de les Illes Balears (Análisis de las anomalías detectadas en la producción de hormigones y sus implicaciones a nivel estructural y de durabilidad en las obras del Club de Mar)", 2021. Investigador principal: Antoni Cladera Bohigas. Club de Mar-Mallorca. Amount: 4,840 €.

"Monitorización de la deformación-tensión de compresión de 4 barras de acero durante realización ensayo in-situ (Edificio Son Quint -Palma), para el desplazamiento vertical de edificio de 4 plantas". Desarrollos constructivos de Viviendas, S.L. 2018. Amount: 1754,50 €.

"Informe sobre lesiones observadas en edificio Gaspar Melchor de Jovellanos". Universitat de les Illes Balears. 2019. Amount: 2,500 €.

Patent ES2592554 (B1) - **Cladera, A.**; Ribas, C.; Mas, B.; Rius, J. "Método de refuerzo activo frente a esfuerzo cortante o punzonamiento en elementos portantes estructurales, y sistema de refuerzo activo", España. UIB, 2016.

"Estudio de la fisuración aparecida en la losa superior del enlace de la MA-20 con la MA-3018 y propuesta de actuaciones para su reparación". Melchor Mascaró SAU. 2015. Amount: 4840€

"Informe de patologías y propuesta de reparación del puente de la Vía de Cintura sobre el ferrocarril Palma – Inca". UTE Eix Ponent-Llevant. 2010-2013. Amount: 8.923,75 €