



## Timothy N. Treserras, Ph.D., P.E., CXL

Senior Engineer | Mechanical Engineering  
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### Professional Profile

Dr. Treserras' areas of expertise include mechanical engineering, electro-mechanical systems, materials science, vibrational and acoustic analysis, and prototype design. His expertise includes: impacts, collisions, load and vibrational analysis on structures, the mechanical behavior of materials (e.g., stress analysis on parts, fatigue and wear), and the study of systems under the action of external forces (e.g., gear trains, appliances/machines, power transmission). He also has experience in electro-mechanical systems with practical skills in basic analog and digital circuit analysis. Dr. Treserras is certified as a SolidWorks associate, for use in computer aided part design and rapid prototyping.

During his time with Exponent, Dr. Treserras has worked principally as an engineering consultant to companies needing design or failure analysis support for products. He has developed expertise in the area of acoustic and vibrational analysis (e.g., measuring noise as it relates to human hearing). Dr. Treserras is an Adjunct Professor at the University of Miami, Mechanical Engineering department.

Dr. Treserras recently worked in Afghanistan for 5 months with the U.S. Army's Rapid Equipping Force (REF), whose mission is to harness current and emerging technologies to provide immediate solutions to the urgent challenges of the U.S. Army forces. As a prototype engineer, Dr. Treserras worked one-on-one with field soldiers and high ranking officers, solving complex multidisciplinary problems, utilizing technologies in: radio frequency (RF) transmission; welding and fabrication; 3D-printing, automated milling (CNC); computer networking; video/audio surveillance; programmable microcontrollers; batteries and basic circuitry.

Dr. Treserras completed his Ph.D. at the University of California, Berkeley, where his research focused on creating a modified theory of elastic rods. Prior to joining Exponent, Dr. Treserras was an instructor for a machine and manufacturing design course at UC Berkeley.

During his undergraduate and graduate study Dr. Treserras served as a reserve specialist for community associations, where he developed budgets and replacement schedules for common area mechanical and structural components (e.g., HVAC, pumps, pool, and spa heaters).

### Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, University of California, Berkeley, 2009

M.S., Mechanical Engineering, University of California, Berkeley, 2006

B.S., Mechanical Engineering, California State University, Northridge, honors, 2003

Certificate & Badge of Wartime Service (Operation Enduring Freedom, Afghanistan), presented by

Lieutenant Colonel Keith Matiskella, U.S. Army, 2014

Alfred P. Sloan Fellowship, 2005-2009

California State University Presidential Scholar, 1997-2003

Tau Beta Pi

## Licenses and Certifications

Licensed Professional Engineer, California, #35763

Licensed Professional Engineer, Florida, #74970

Certified SolidWorks Associate (CSWA), #C-8ER74RU47H

CXLT (Certified XL Tribometrist), #1606615

## Professional Affiliations

American Society of Mechanical Engineers — ASME

ASME Paper Reviewer

Society of Automotive Engineers — SAE International

## Publications

O'Reilly OM, Tresierras TN. On the evolution of intrinsic curvature in rod-based models of growth in long slender plant stems. *International Journal of Solids and Structures* 2011; 48:1239-1247.

O'Reilly OM, Tresierras TN. On the static equilibria of branched elastic rods. *International Journal of Engineering Science* 2011; 49:212-227.

O'Reilly OM, Tresierras TN. An evolution equation for plant growth. *Proceedings, ASME Summer Bioengineering Conference*, 2009.

O'Reilly OM, Tresierras TN, Senan NAF. Modeling the growth and branching of plants: A simple rod-based model. *Journal of the Mechanics and Physics of Solids* 2008; 5610.

## Presentations

Tresierras TN. On continuum mechanics and rigid-body dynamics. National Technical University in Quito, Ecuador, 2009.

Tresierras TN. On variational principles. Technische Universität Darmstadt, Germany, 2006.