BIOGRAPHY OF TAREK I. ZOHDI

Tarek I. Zohdi http://www.me.berkeley.edu/people/faculty/tarek-i-zohdi/ received his Ph.D. in 1997 in Computational and Applied Mathematics from the University of Texas at Austin. He was a post-doctoral fellow at the Technical University of Darmstadt in Germany from 1997 to 1998 and then a lecturer (C2-Oberingenieur) at the Gottfried Leibniz University of Hannover in Germany from 1998 to 2001, where he received his Habilitation in General Mechanics (Allgemeine Mechanik, 2002). Approximately one out of every twenty doctoral degree holders in Germany is allowed to proceed with a Habilitation. It is the highest academic degree in Germany and is usually required to obtain the rank of full Professor there and in other parts of Europe. In July 2001, he became an Assistant Professor at the University of California, Berkeley, in the Department of Mechanical Engineering. He was promoted to Associate Professor in July 2004 and to Full Professor in July 2009. He has held a number of administrative posts at UC Berkeley, including:

- 7/2022-present Associate Dean for Research, College of Eng., UC Berkeley.
  https://engineering.berkeley.edu/about/leadership-team/
  https://www.erso.berkeley.edu/web/org-charts
- 7/2023-present Faculty Director, Masters of Advanced Studies-Engineering., UC Berkeley.
  https://mas-e.engineering.berkeley.edu/ , Fortune, Best Colleges.com and   Forbes
- 7/2020-6/2023 Academic Director, Sutardja Center for Entrepreneurship & Technology (SCET), UC Berkeley,
  https://scet.berkeley.edu/scet-names-tarek-zohdi-as-new-academic-director/
- 7/2020-6/2022 Associate Dean for Post Baccalaureate Programs, College of Eng., UC Berkeley.
  https://engineering.berkeley.edu/academics/graduate-programs/professional-masters-programs/
- 7/2019-present: Director of the UCB-DEWA Program: https://engineering.berkeley.edu/2019/05/dubai-electricity-and-water-authority-partnership-advances-future-energy-educational-program
- 7/2018-6/2020: Chief Technology Officer of the Fung Institute, UC Berkeley
  https://funginstitute.berkeley.edu/about-us/our-people/staff/
- 7/2018-6/2020: Elected Chair of the Faculty, College of Engineering, UC Berkeley
  https://engineering.berkeley.edu/
- 7/2012-present: Chair, Computational and Data Science and Eng. Program, UC Berkeley
  https://data.berkeley.edu/decdse
- 7/2009-6/2012: Vice-Chair for Instruction, Dept. of Mech. Eng., UC Berkeley
  https://me.berkeley.edu/
- 7/2008-6/2012: Chair, Engineering Science Program, UC Berkeley.
  https://engineeringscience.berkeley.edu/
- 7/2008-11/2008: Acting Assoc. Dean, Interim Eng. Sci. Prog. Exec. Comm., UC Berkeley.

From 2014-2020, he was a Chancellor's Professor of Mechanical Engineering. Since 2016, he is the holder of the W. C. Hall Family Endowed Chair in Engineering. He also holds a Faculty Scientist position at Lawrence Berkeley National Labs and an Adjunct Scientist position at the Children's Hospital Oakland Research Institute. His main research interests are in modeling, simulation and optimization of nonconvex multiscale-multiphysics problems for industrial applications. He has published over 200 archival refereed journal papers and eight books: (1) Introduction to computational micromechanics (T. Zohdi and P. Wriggers, Springer-Verlag), (2) An introduction to modeling and simulation of particulate flows (T. Zohdi, SIAM), (3) Electromagnetic properties of multiphase dielectrics: a primer on modeling, theory and computation (T. Zohdi, Springer- Verlag), (4) Dynamics of charged particulate systems: modeling, theory and computation (T. Zohdi, Springer-Verlag) (5 and 6) A finite element primer for beginners-the basics (T. Zohdi, Springer-Verlag, 2 distinct editions), (7) Modeling and simulation of functionalized materials for additive manufacturing and 3D printing: continuous and discrete media (T. Zohdi, Springer-Verlag) and (8) Modeling and simulation of infectious diseases: microscale transmission, decontamination and macroscale propagation (T. Zohdi, Springer-Verlag), as well as eight handbook/book chapters and five encyclopedia chapters. In 2000, he received the Zienkiewicz Prize and Medal, which are awarded once every two years, to one post-graduate researcher under the age of 35, by The Royal Institution of Civil Engineers in London, to commemorate the work of Professor O. C. Zienkiewicz, for research which contributes most to the field of numerical methods in engineering. In 2002, he received the Best Paper of the Year 2001 Award in London, at the Lord's Cricket Grounds, for a paper published in Engineering Computations, pertaining to modeling and simulation of the propagation of failure in particulate aggregates of material. In 2003, he received the

Junior Achievement Award of the American Academy of Mechanics. The award is given once a year, to one post-graduate researcher, to recognize outstanding research during the first decade of a professional career. In 2008, he was elected Fellow of the International Association for Computational Mechanics (IACM) and in 2009 he was elected Fellow of the United Stated Association for Computational Mechanics (USACM). The USACM is the primary computational mechanics organization in the United States and the International Association for Computational Mechanics is the primary international organization in this field. In 2011, he was selected as "Alumnus of the Year" by the Department of Mechanical Engineering at Louisiana State University (LSU), where he did his undergraduate studies. In 2017, he was awarded the University of California, Berkeley Distinguished Teaching Award. The Distinguished Teaching Award is a campus-wide recognition for faculty that have established a sustained and varied record of teaching excellence. This is the highest award for teaching in the University: http://teaching.berkeley.edu/node/240 and https://www.youtube.com/watch?v=ntzkn71r2Sg. In 2019 he was elected as Fellow of the American Academy of Mechanics (AAM)- only one new Fellow is inducted in the nation and the Americas into the AAM each year: https://medium.com/the-coleman-fung-institute/tarek-zohdi-named-2019-aam-fellow-d4df374246e1. In 2020, he received the prestigious Humboldt-Forschungspreis (Humboldt Research Prize). The prize, given by the Alexander von Humboldt Foundation of the German Government, recognizes renowned researchers outside of Germany whose "fundamental discoveries, new theories or insights have had a significant impact on their own discipline and who are expected to continue producing cutting-edge achievements in the future." He received it in the area of Mechanics in recognition of lifetime achievements: https://www.humboldt-foundation.de/web/humboldt-award.html, https://en.wikipedia.org/wiki/Humboldt_Prize and https://www.uni-due.de/2020-07-21-humboldt-forschungspreistraeger-tarek-i-zohdi-kommt. He is an Editor-in-Chief of the leading journal in his field, Computer Methods in Applied Mechanics and Engineering (CMAME) and serves on 11 editorial boards of international journals. He is also the co-founder and Co-Editor-in-Chief of the journal Computational Particle Mechanics (CPM). He has organized or co-organized over 30 international conferences and workshops and been appointed/invited to the Scientific Advisory Boards of over 40 international conferences. In 2012, he was elected President of the USACM and served from 2012 to 2014. Since 2009, he has served as a representative of the USACM on the General Council of the IACM, which is the governing committee of the primary international organization in his field of research and was elected to the Executive Council of IACM in 2020 (seven were elected worldwide in 2020). In 2014, he was appointed by the United States National Academy of Science (NAS) and the National Research Council (NRC) as a member of the US National Committee for Theoretical and Applied Mechanics (USNC/TAM) representing the USACM (2014-2018): https://www.nationalacademies.org/our-work/us-national-committee-for-theoretical-and-applied-mechanics-usnc-iutam. USNC/TAM is the primary national governing body for Mechanics in the United States. This committee operates under the auspices of the US Board on International Scientific Organizations (BISO) and the Policy and Global Affairs Division of the NRC. Furthermore, he is the national coordinator for the NAS and USNC/TAM for AmeriMech Symposia, which are intended to promote interactions among researchers in an area of contemporary interest in the mechanics of fluids and solids http://sites.nationalacademies.org/pga/biso/iutam/pga_086043. These symposia are designed to encourage participation of young researchers, and to promote interdisciplinary ideas and discussions. This format allows for in-depth discussions and close interactions between participants. Such symposia are renown to help assess the state-of-the-art and chart new directions for the future. In 2018, he was elected to Member-at-Large status of the USNC/TAM by the National Academy of Sciences: http://www.me.berkeley.edu/about/news/me-professor-tarek-zohdi-appointed-member-large-us-national-academy-sciences-and-national and served from 2018-2022. Overall, he has been a plenary speaker at each of the three major conferences in his field: (a) The World Congress for Computational Mechanics (Sao Paulo , 2012), (b) The United States National Congress for Computational Mechanics (Montreal, 2017) and (c) The International Conference on Particle-based Methods (Stuttgart 2013, Hannover, 2017, Hamburg 2021) and given more than 200 other plenary, keynote and contributed lectures at conferences, universities and other research institutions worldwide. In addition to his academic credentials, he has been active in five main industrial areas:

- **Modeling and simulation of high-strength fabric:** He has worked extensively in the computational analysis of high-strength ballistic fabric shielding. Initially, this work was funded by the FAA and Boeing as part of a 10 year (2001-2011) multi-million dollar laboratory and simulation effort to develop ballistic fabric shields for the Boeing 787. He was heavily involved in the development of 787 Boeing designs. The work was then applied to the development of new ballistic fabric shielding armor (from 2007-present) with the Army Research Labs (ARL) and the Army High Performance Computing Research Center (AHPCRC). In summary, the combined laboratory, modeling and simulation efforts have been instrumental for the development of new types of ballistic fabric shields for the safety and betterment of society.
- **Modeling and simulation of highly heterogeneous materials:** He worked extensively in the computational analysis of particulate functionalized materials in multiphysical regimes. This work has been continuously funded by a number of

industries, most notably for power-generation materials in harsh environments such as thermal barrier turbine blade coating materials (CMCs: Ceramic Matrix Composites) and high-voltage electromagnetic generator (dielectric) materials, such as End Corona Protection systems. This work has been a direct industrial outgrowth of the unique book: *Introduction to computational micromechanics* (T. Zohdi and P. Wriggers, Springer-Verlag: https://cmmrl.berkeley.edu/zohdi-publications/).

- **Modeling and simulation of fire-technologies**: In 2018, he founded the UC Berkeley Fire Research Group(FRG): https://frg.berkeley.edu/, whose mission is to serve the best interests of the State of California and society at large, by working toward the development and implementation of more effective solutions for uncontrolled wildfires. The FRG's mission is to develop, harness and integrate the state-of-the-art technologies across many fields in order to produce robust and affordable firefighting systems that are easy to maintain, upgrade and deploy for early detection and control of fires. The FRG has brought together engineers, scientists, technologists, first responders and firefighters to bolster research in fire science, management and emergency control.

- **Modeling and simulation of food systems**: In 2019, he founded the UC Berkeley Center for Next Generation Food Systems: https://food-manufacturing.berkeley.edu/. The overall mission of the center is to optimize societal food production, quality, and food safety/security in the era of pandemics and beyond. These themes are central to California since its economy is the 5th largest economy in the world. The center encourages cross-collaboration and sharing of information, where possible, and through various forums to further enhance expanding opportunities. Furthermore, the center supports the research, education, extension, and economics endeavors designed to advance public knowledge and commercial interests. The center explores themes associated with (a) pandemic driven food system security and safety, (b) improving food yield, quality, and nutrition, (c) decreasing energy and water resource consumption, (d) increasing production yield and eliminating food waste, (e) large surface-area agriculture, using energy-efficient technologies such as solar and wind and the (f) use of autonomous systems, drones, sensors and machine-learning for detection of inefficiencies and hazards. The center is part of a 20,000,000 dollar multi-campus NSF-USDA-NIFA funded network, https://engineering.berkeley.edu/news/2020/08/uc-berkeley-team-advances-food-systems-research-in-new-20m-nsf-center/. Zohdi is the PI of the UC Berkeley hub/node.

- **Modeling and simulation of advanced manufacturing processes:** He has been heavily involved in the National Network of Manufacturing Innovation (NNMI) system that has been developed over the last decade by the US Government. The goal is to add capacity to the National Network of Manufacturing Innovation, a 2014 initiative to increase the competitiveness of U.S. manufacturing by streamlining research and development and increasing collaboration among industry, academia, national labs and federal partners. Form 2016-2021, he was the Northern California PI for the Northern California Clean Energy Smart Manufacturing Innovation Institute (CESMII); see Whitehouse announcement: http://engineering.berkeley.edu/2016/06/california-new-headquarters-smart-manufacturing-institute and http://www.me.berkeley.edu/about/news/president-obama-announces-winner-new-smart-manufacturing-innovation-institute-competition which is part of a 140,000,000 dollar consortium of universities, national labs and companies geared towards smart clean manufacturing (headquartered at UCLA). The mission of the consortium, consisting of 200 partners from 30 states representing a wide spectrum of interests across industry and academia, is to help hone advanced manufacturing's competitive edge in the United States by increasing efficiency and accelerating the adoption of technologies such as advanced sensors, data analytics and digital controls in manufacturing. Also, from 2016-2021, he was the California Principal Investigator for another successful consortium NNMI grant (the Advanced Robotics Manufacturing (ARM), headquartered at Carnegie Mellon) in which he was appointed the coordinator of the Northern California Branch; see announcement http://www.me.berkeley.edu/about/news/dod-announces-award-new-advanced-robotics-manufacturing-arm-innovation-hub and http://engineering.berkeley.edu/2017/01/berkeley-regional-center-new-robotics-manufacturing-consortium which is part of a 253,000,000 dollar consortium of universities, national labs and companies focused on advanced robotic manufacturing.

SHORT ZOHDI BIOGRAPHY: Tarek I. Zohdi received his Ph.D. in 1997 in Computational and Applied Mathematics from the University of Texas at Austin and his Habilitation in General Mechanics (Allgemeine Mechanik) from Gottfried Leibniz University of Hannover in Germany. He is currently a Professor of Mechanical Engineering, Chair of the Designated Emphasis Program in Computational and Data Science and Engineering, Associate Dean for Research in the College of Engineering and holder of the W. C. Hall Family Endowed Chair in Engineering at UC Berkeley. He also holds a Faculty Scientist position at Lawrence Berkeley National Labs. He has published over 200 archival refereed journal papers and eight books. In 2012, he was elected President of the United States Association for

Computational Mechanics (2012-2014). He is an Editor-in-Chief of the leading journal in his field, Computer Methods in Applied Mechanics and Engineering (CMAME) and serves on 11 editorial boards of international journals. He is also the co-founder and Co-Editor-in-Chief of the journal Computational Particle Mechanics (CPM). Overall, he has given more than 200 plenary, keynote and contributed lectures at conferences, universities and other research institutions. He is active in five main industrial areas (1) high-strength fabric (2) highly heterogeneous materials (3) fire-control technologies (4) food systems and (5) advanced manufacturing processes. In 2000, he received the Zienkiewicz Prize and Medal by The Royal Institution of Civil Engineers in London. In 2003, he received the Junior Achievement Award of the American Academy of Mechanics. In 2008, he was elected Fellow of the International Association for Computational Mechanics (IACM) and in 2009 he was elected Fellow of the United Stated Association for Computational Mechanics (USACM). In 2017, he received the UC Berkeley Distinguished Teaching Award; the highest award for teaching at UC Berkeley. In 2019 he was elected as Fellow of the American Academy of Mechanics (AAM)-only one new Fellow is inducted in the nation and the Americas each year: https://medium.com/the-coleman-fung-institute/tarek-zohdi-named-2019-aam-fellow-d4df374246e1. In 2020, he received the prestigious Humboldt-Forschungspreis (Humboldt Research Prize). For more information see http://www.me.berkeley.edu/people/faculty/tarek-i-zohdi.