Short Bio:

Dr. Pania Newell is currently an Associate Professor in the Department of Mechanical Engineering and an elected affiliate of the Scientific Computing and Imaging Institute (SCI) at the University of Utah. She also holds adjunct appointments in the Department of Civil Engineering and the Kahlert School of Computing. She earned her Ph.D. from the University of Colorado Boulder in 2011, followed by a postdoctoral fellowship at Sandia National Laboratories in the Engineering Sciences Center. In 2012, she became a Senior Member of the Technical Staff at Sandia and joined the University of Utah in 2017.

Dr. Newell is a leading authority in the mechanics of heterogeneous porous materials, addressing critical challenges in material design and mechanics driven by multiscale, multiphysics, and fracture phenomena. Her research portfolio is distinguished by its integration of theoretical modeling, advanced computational approaches, and state-of-the-art experimental techniques, recently expanded through the incorporation of scientific machine learning.

She has led or co-led major federally funded research initiatives as principal or co-principal investigator, with support from the U.S. National Science Foundation, the U.S. Department of Energy, and other federal agencies. Her leadership as co-PI on two DOE Energy Frontier Research Centers led to the publication of the landmark volume *Science of Carbon Storage in Deep Saline Formations: Process Coupling across Time and Spatial Scales*, where she served as lead editor and contributed three chapters, highlighting her expertise and leadership in coupled processes within complex porous systems. Her scholarly output also includes more than 60 peer-reviewed publications and over 50 invited talks worldwide. Among these, she delivered a plenary keynote at FraMCoS 2025, one of the premier global conferences in fracture mechanics, sharing the stage with field pioneers such as Professors Bazant, De Lorenzis, Reddy, Rabczuk, and Pijaudier-Cabot.

Dr. Newell's impact also extends through mentorship. Since her time at the University of Utah, she has mentored 9 postdoctoral researchers, advised 8 PhD students (3 graduated), and supervised 22 undergraduates. Many of her mentees have gone on to become researchers and developers at national laboratories, leading academic institutions, and top-tier companies. It worth mentioning that one of her PhD students received two Best Paper Awards at the EMI from different technical committees, reflecting the high caliber of scholarship fostered under her guidance.

Dr. Newell is also recognized for shaping the broader research agenda through strategic community-building. She has organized multiple national and regional workshops aimed at defining future directions in computational mechanics and sciences, fostering cross-disciplinary collaboration among communities in mechanics, applied mathematics, and machine learning. One notable event, the workshop *Machine Learning in Heterogeneous Porous Materials*, was sponsored by the U.S. National Committee for Theoretical and Applied Mechanics and featured global leaders including Professors Huajian Gao and Markus Buehler.

Outside of traditional academic venues, Dr. Newell is the co-founder and co-host of a podcast called *This Academic Life*, a widely acclaimed podcast with over 40,000 listeners that promotes inclusive dialogue on academic culture, scientific careers, and leadership in higher education.

Vision Statement:

It is an absolute honor to present my application to join the Board of Governors (BoG) of the Engineering Mechanics Institute (EMI). My vision is to work alongside other members to position EMI as a leader in redefining the role of mechanics in modern engineering. By fostering collaboration across national labs, academia, and industry, we can make EMI the central hub for addressing major challenges and advancing innovations in engineering mechanics.

A key focus will be the establishment of *EMI regional student and early-career chapters* to enhance grassroots engagement and support the next generation of researchers. Another priority will be initiating the "*open mechanics*" movement, which aims to promote the culture of sharing modern computational tools, data, and insights across mechanics communities.

Thanks to the generous support of the National Science Foundation, I joined EMI in 2018 and have remained an active member ever since. Serving as Vice Chair (2019–2021) and Chair (2021–2023) of the EMI Poromechanics Committee, I had the opportunity to shape technical activities, foster community, and create platforms to support researchers at all career stages. In parallel, my technical expertise, spanning computational and experimental mechanics, multiphysics and multiscale modeling, fracture mechanics, and scientific machine learning, has enabled me to contribute meaningfully to the field. Since 2019, I have organized, co-organized, and chaired various sessions on coupled processes, while also supporting my students and postdocs in participating in the conference. As Chair of the Poromechanics Committee, I launched a recurring seminar series, organized student poster competitions, and maintained bi-weekly digests and community-building events and activities.

My experience in both academia and the U.S. Department of Energy national laboratories, combined with leadership roles in major scientific organizations, including the International and U.S. Associations for Computational Mechanics (IACM/USACM), the American Geophysical Union (AGU), and the American Society of Mechanical Engineers (ASME), uniquely positions me to bridge communities across academia, national labs, and industry. This breadth of engagement allows me to help position EMI at the forefront of innovation, where mechanics, data science, and materials converge.

I am currently the Chair of the 8th Biot Conference on Poromechanics, which will be hosted at the University of Utah in October 2025. This event, co-organized with EMI, will provide an opportunity to bring two major communities together and further strengthen global collaborations.

Importantly, I am a strong advocate of open science. I believe EMI can promote open mechanics movement to encourage researchers freely share computational tools, data, and insights with broader scientific, industrial, and policy communities. This transparency and accessibility will accelerate discovery, democratize knowledge, and amplify the real-world impact of our field.

In summary, if elected to the BoG, I will prioritize:

- Bridging academia, national labs, and industry through cross-sector programs addressing current and emerging challenges in engineering mechanics.
- Establishing EMI regional student and early-career chapters to expand EMI's grassroots presence and foster local scientific communities.
- Initiating a movement toward open mechanics, where members share tools, data, and insights across various mechanics-related problems.
- Empowering student and postdoc leadership through dedicated workshops, mentoring, and technical visibility at EMI conferences.
- Advancing technical frontiers in mechanics through interdisciplinary initiatives.

- Championing equal opportunity for deserving researchers through EMI awards.
- Expanding financial support for students and early-career professionals through strategic fundraising, partnerships, and institutional engagement.

EMI is uniquely positioned to lead a transformative decade in engineering mechanics. With your support, I am eager to contribute my technical expertise, cross-institutional experience, and collaborative energy to help EMI realize this bold and impactful future and to serve as your voice on the BoG. Thank you for your support.

Pania Newell