

Interview

## **An Interview with Dr. Emanuele Sgambitterra**

*Recent Progress in Science and Engineering* Editorial Office

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**Dr. Emanuele Sgambitterra**



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### **1. Could You Please Tell Us Your Scientific Background and Main Research Area?**

I am a Mechanical Engineer with a Ph.D. in Materials and Structural Engineering from the University of Calabria. My academic background spans mechanics of materials, fracture mechanics, and experimental solid mechanics. During my doctoral studies, I had the opportunity to further enrich my training with international experience as a visiting Ph.D. student at the University of Illinois at Urbana-Champaign.

My primary research focuses on the fatigue and fracture behavior of structural materials, with particular interest in shape memory alloys (SMAs), welded joints, and advanced metallic materials subjected to cyclic loading. My work integrates both experimental investigation and computational modeling to improve material durability in demanding engineering applications. Recently, I have been exploring the electro-thermo-mechanical behavior of SMAs from both experimental and numerical/modelling point of view, with the aim of utilizing them as actuators in prosthetic and exoskeleton systems, as well as in adaptive morphing surfaces for aerospace and automotive applications.

### **2. Could You Please Briefly Share Your Career Development Story with Us? And What Impressed You Most in Your Research Life?**

Following my Ph.D., I continued my academic journey at the University of Calabria, where I advanced from research fellow to Assistant Professor. Throughout this time, I've contributed to several national and international research projects, mentored graduate students, and published extensively in leading scientific journals.

I'm also the co-founder of 2SMARtEST (<https://2smartest.com>), an academic spin-off that develops innovative pipeline couplings using shape memory alloys for extreme environments. Our solutions have been successfully implemented at CERN, in Geneva, where reliability is critical.

What has always impressed me most about research is its interdisciplinary and collaborative nature. Working alongside experts from engineering, materials science, and physics has shown me the power of integrated perspectives in driving meaningful innovation.

### **3. Where Are Your Sources of Information? Where Do You Get the Latest News about Your Research Area or Where Do You Take Inspiration From?**

I stay current by regularly consulting leading scientific journals and attending both national and international conferences in my field.

Inspiration often stems from collaborative discussions, peer exchanges, and tackling real-world engineering challenges—all of which push the boundaries of traditional solutions and encourage creative thinking.

### **4. Considering the Progress in Your Research Area, Could You Please Share with Us Some Hot Topics or Cutting-Edge Technologies in Your Research Field? And What Challenges and/or Developments May Be Encountered in the Coming Years?**

Some of the most exciting topics in my field include the additive manufacturing of metal alloys, integration of smart materials, and multiscale fatigue modeling. These technologies are opening

new avenues in lightweight structural design, structural health monitoring, and adaptive engineering systems.

Future challenges will involve increasing the predictive reliability of fatigue life estimations, particularly for non-traditional materials like SMAs. Moreover, we must continue improving simulation accuracy to reflect real loading scenarios, such as variable amplitude fatigue and complex environmental conditions.

#### **5. Do You Also Offer Training and/or Further Education in Your Area?**

Yes, I am deeply engaged in higher education and research training. I teach courses in Finite Element Analysis and Experimental Techniques and Instrumentation, and I supervise Master's and Ph.D. students in mechanical and materials engineering. I also contribute to national doctoral schools and regularly organize workshops on fracture mechanics and fatigue testing.

#### **6. Is There a Book You've Read that You'd Recommend Universally (i.e., to Everyone You Meet)?**

I would highly recommend "Dialogue Concerning the Two Chief World Systems" by Galileo Galilei. Far more than a treatise on astronomy, it's a powerful exploration of critical thinking and intellectual freedom. Through a dynamic and provocative debate, Galileo dismantles entrenched dogma using logic and observation—a reminder of how the scientific method began.

In addition, "The Structure of Scientific Revolutions" by Thomas Kuhn provides a profound understanding of how scientific paradigms shift over time, changing the way we view the world and the nature of scientific progress itself.

#### **7. What Valuable Suggestions or Experiences Would You Like to Share with Young Scholars Regarding How to Be a Professional Researcher?**

Remain passionate and curious, and don't be afraid to question assumptions. Resilience is key—both success and failure are vital parts of the research process. Build a strong network, embrace interdisciplinary collaboration, and always seek to improve your communication skills. Clear, impactful storytelling can be as important as the research itself.

#### **8. What Is Your Long-Term Research Goal?**

My long-term objective is to advance the development of high-performance, smart structural materials that exhibit exceptional fatigue resistance and damage tolerance. Additionally, I aim to leverage my expertise in shape memory alloys and artificial muscles—both in experimental and computational domains—to design human-like prostheses. These systems would combine neural integration, actuation, and sensing capabilities, ultimately enabling more natural, responsive movement for users.

#### **9. What Attracts You to Join the Editorial Board of *Recent Progress in Science and Engineering*?**

I was drawn to the journal's broad, multidisciplinary focus and its commitment to open-access dissemination of high-quality research. Serving on the Editorial Board provides an opportunity to

support rigorous peer review, encourage innovative work, and help foster the next generation of researchers in science and engineering.

**10. What Do You Think of the Future of *Recent Progress in Science and Engineering*, an Open-Access Journal?**

The outlook is very promising. Open-access platforms like RPSE play a crucial role in democratizing scientific knowledge and enabling global collaboration. With a strong commitment to excellence and innovation, RPSE is well-positioned to become a leading voice in sharing transformative research across disciplines.