

REZA ZOUGHJI

**Professor, Electrical and Computer Engineering; Director, Center for Nondestructive Evaluation (CNDE), Iowa State University
AMES, IA**

HOW DID YOU FIRST BECOME INVOLVED IN NDT?

I started my academic career at Colorado State University in the late '80s, where I was introduced to NDT. My formal academic background was in the field of radar/microwave remote sensing. At that time, there was very little work done in microwave NDT.

IS YOUR WORK FOCUSED ON A PARTICULAR FIELD?

My research focus is solely on microwave (~300 MHz-30 GHz) and millimeter wave (30-300 GHz) NDT. These signals are well suited for inspection of a plethora of nonconductive composite materials and structures for materials property characterization and

for detection and evaluation of defects. Since I started my career, we have been able to create a significant level of intellectual property in the forms of journal publications and 20 issued US and several international patents.

WHAT'S BEEN YOUR MOST INTERESTING APPLICATION OF NDT?

Concrete, with its significantly varied temporal materials property and various ways by which different types of damage can be introduced over time, is by far the most complex and challenging "composite" material I have worked on.

HOW HAS NDT CHANGED DURING YOUR CAREER?

Rapid advances in technologies that help NDT, for example availability of hardware at higher microwave frequencies, that were not available 10 or 15 years ago. Development of new methods of data processing and analysis rendering faster and more reliable inspection outcomes. Development and utilization of new (complex) composite materials requiring more than the "standard" NDT techniques for inspection. Prevalence of additive manufacturing, which poses extremely challenging NDT inspection issues, to name a few.

WHAT CAN INDUSTRY DO TO ENCOURAGE CAREERS IN NDT?

The general public does not know what NDT is, and more importantly, is not aware of its every day positive impacts on our broader society. In collaboration with other organizations, industry can help

make the public more aware of this fact and its educational benefits, stable and rewarding career paths, and more.

WHAT'S BEEN YOUR GREATEST CHALLENGE ON THIS JOURNEY?

Microwave NDT is not considered a "standard" NDT modality and it will be some time before it is established and referred to as such. However, simply trying to bring attention to its impactful and real potentials has been a career-long endeavor.

WHAT'S THE MOST REWARDING ASPECT OF YOUR WORK?

All who work in the field of NDT have one ultimate goal, and that is to make the world a safer place. Knowing that one's work contributes to this overall goal is extremely rewarding.

WHAT ARE YOUR PROFESSIONAL GOALS?

With respect to research goals, coming out of college, I never fathomed spending over 35 years in a field of engineering and sciences that then I knew nothing about or had not even heard of. Having contributed to bringing "microwave NDT" from a "new and emerging technology" state to a developed and "multifaceted NDT modality" has been most rewarding. So, you might say I have achieved my goals already!

WOULD YOU SHARE WITH US A PROFESSIONAL BUCKET LIST ITEM?

Help build the so-called "Dr. McCoy's Microwave Tricorder" for burned skin inspection and skin cancer detection. **ME**

