



OPENING SHOT

Jack Champaigne | Editor | *The Shot Peener*

Patience is a Virtue

- 1997 EI banquet at Purdue celebrating the launch of Shot Peening Program with Dean of School of Technology, Don Gentry
- 1997 Purdue University students visit EI in Mishawaka
- 2001 Contributions from Progressive Technologies, WS Tyler, and Ervin Industries start the Purdue Shot Peening Center
- 2015 Center for Surface Engineering and Enhancement (CSEE) program established at Purdue
- 2019 Media Inspection using image analysis project launched at CSEE
- 2021 Dr. Siavash Ghanbari joins Electronics Inc. as Chief Scientist for Advanced Research

I remember how embarrassed I was in 1996 as the chairman of the International Scientific Committee for Shot Peening in San Francisco. When we reviewed the academic attendees by country, there was no one from the USA. I vowed to change that. I think you can see the long path I traveled.

Dr. Ghanbari brings a lot of talent to our team at Electronics Inc. His education background follows.

Purdue University Doctor of Philosophy PhD, Materials Engineering 2019

Southern Illinois University Edwardsville Master of Science, Mechanical Engineering 2015

Azad University, Science and Research Branch Master of Science, Materials Engineering 2010

Azad University, Science and Research Branch Bachelor of Science, Materials Engineering 2007

Purdue University (Postdoctoral Researcher)

- Design electronic control units and sensors
- Develop software and computational modeling for shot peening process control
- Analyze and characterize flowability of aluminum and copper powders in additive manufacturing process

Purdue University (Graduate Research Assistant)

- Fatigue crack initiation and propagation analysis, residual stresses, yield stress, plastic deformation measurements using nano-indentation and FEM modeling
- Developed Molecular Dynamic (MD) simulation on dislocation nucleation in highly twinned Al thin films
- Designed and developed novel experiments to measure residual stresses after severe plastic deformation using X-ray method and nano-indentation
- Developed numerical and experimental analysis to improve surface roughness and residual stress after plastic deformation
- Developed materials mesoscale simulations Crystal Plasticity Finite Element Method (CPFEM)
- Developed Finite Element Method (FEM), Discrete Element Method (DEM), and Smooth Particle Hydrodynamic (SPH) for elastoplastic deformation analysis
- Developed numerical analysis of hygroscopic swelling cellulose nanocrystal (CNC) film

One of Dr. Ghanbari's assignments at EI relates to a better understanding of intensity and coverage process control of shot peening. My patience has paid off. ●

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