Optical Engineering

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Optical Engineering in Education

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I wrote many years ago that I felt physicists and photonics scientists were like Spock on *Star Trek* and that optical engineers were like Scotty. Spock would always understand the physics behind the problems and would usually save the day through some ground-breaking discovery that, on earth, would win the Nobel Prize. Scotty, in the meantime, would use what Spock had discovered to kluge together an effective way to power or protect the ship.

While scientists and physicists study the basics of light and matter interactions, the emission and detection of light, and new materials to control or process light, optical engineers take these findings and build devices and systems. I know that I am generalizing here and there are exceptions in both cases. The basics sometimes become applied, and engineering sometimes dips into discovery.

Ron Driggers and Norm Kopeika at Ben Gurion University.

There are many schools that teach the Spocks of the world with formal education in optics and photonics. There are fewer programs that teach optical engineering. I recently visited Ben Gurion University in April of this year. They have a formal program in optical engineering with a department similar to an electrical engineering department. It was founded by Dr. Norm Kopeika, and it is going strong. During my visit, I was honored to give a lecture on my technical area of target acquisition, and I also gave the SPIE student chapter a talk providing recommendations on their career paths. The students were some of the brightest and best motivated people I have met, and the faculty is all grateful to be part of this department and the growing field.

Dr. Kopeika has become a celebrity on Ben Gurion University campus, but he is too humble to notice it. It took a great deal of perseverance to convince the university to create the department, but its performance in publications and research funding is now one of the highest at the school. The department has six SPIE Fellows, which demonstrates that they are serious about making a difference in the optical engineering community. I had a chance to spend time with each of the faculty and they are all passionate about their path and their progress.

I met Dr. Kopeika 20 years ago when I finally designed infrared imagers that were no longer limited by the sensor range performance. They were ultranarrow field-of-view sensors that were limited by the turbulence between the imager and the target. Dr. Kopeika was the expert, and he mentored my team on how to model, measure, and partially mitigate the problems associated with the atmosphere. There were many Spocks in the area of atmospherics, but he was the Scotty who allowed us to understand target acquistion imager design better in hard atmospheres. Now, he is teaching other Scotties in optical engineering.

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Editor