Holcombe Department of Electrical and Computer Engineering
Seminar Series

Transparent Antennas for Cube Satellites—Our Experience of Starting a Research Project

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Abstract
Transparent antennas are antennas that are transparent to light. They are very important in applications such as integration with solar cells or window glass. But, the question is how did we identify such a research topic? And, how did we get our research started and resolve issues that came along? This presentation is to share with you some of our experiences and approaches in achieving practical optically transparent antennas.

One very important application of transparent antennas is for very small satellites, such as a cube satellite. As a satellite gets smaller, the surface area of it also gets limited. Therefore, the competition between the space for antennas and solar cells becomes prominent. This issue of limited space for antenna can be easily resolved if one can design optically transparent antennas and integrate them on top of solar cells. Hence, the starting point of our transparent antenna research is based on the demand of small satellite designs. In order to design effective and highly transparent antennas, one needs to find out the optimal design method, prototyping technique, and accurate characterizing procedure to determine the antennas’ practical performance.

In this presentation, we will share our design approach, fast prototyping inkjet printing method, and how we constructed a state-of-the-art antenna measurement range.

Biography of Speaker
Dr. Reyhan Baktur graduated from Clemson University in 2005 and became an assistant professor at Utah State University in 2006, then an associate professor in 2012. Her research interests include antennas for small satellites, miniaturized multifunctional microwave circuits for wireless communication, and computational electromagnetics. She teaches courses in area of electromagnetics and microwave engineering.

As a student at Clemson, Baktur won the first prize in the student paper competition in the 2005 National Radio Science meeting. Her current research awards include two National Science Foundation grants and projects funded by industry. She was the outstanding graduate advisor of her department in 2010, teacher of the year in 2011. In 2003 she was awarded Donald Dudley Award for Undergraduate Teaching Excellence by IEEE Antenna and Propagation Society.