Title: Exploring the Potential of 3D Printing Technologies for Antenna Design and Fabrication - Challenges and Opportunities

Abstract: The 3D printing technology, as a representative of additive manufacturing technology, has shown considerable application prospects and enormous development potential in various fields. Compared with traditional subtractive manufacturing, 3D printing as an additive manufacturing technology has unique advantages, such as a short turn-around cycle, less material waste, and ease of fabricating complex structures. The advantage of 3D printing gives antenna scientists and designers extra freedom to design and fabricate something that has never been seen before. The wide selection of materials in 3D printing makes it easy to manipulate electromagnetic (EM) waves in a 3D-printed antenna by the combination of different material characteristics. However, current research on 3D-printed antennas focuses on using “new” fabrication technology to implement “old” designs. The capability of 3D printing technology to fabricate complex structures has not been well explored. Moreover, the undesirable surface roughness and dimensional tolerance of 3D-printed devices hinder their widespread applications. This talk focuses on the application of 3D printing technology in antennas and microwave devices fabrication, tracing the birth and evolution of 3D printing technology, classifying 3D printing technologies according to different materials and processes, reviewing representative 3D printed antennas and

microwave devices, and envisaging the application of 3D printing technology in the field of EM engineering.