1. **Research Title:** Printed, Flexible Microwave Circuits

2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level:** Electrical Engineering, Materials Science, Chemistry/Additive Manufacturing of Printed Electronics (MS or Ph.D. level)

4. **Objectives:** The goal of this research project is to use non-traditional fabrication techniques to further the development of microwave circuits beyond traditional fabrication methods and/or rigid designs. We are exploring the creation of multilayer devices combining traditional fabrication techniques with non-traditional fabrication techniques. The performance of these devices will be compared to that of state-of-the-art devices fabricated by traditional means. The development of improved devices for use in microwave circuits (including, but not constrained to, inductors, capacitors, transistors, and antennas) is critical in moving beyond the end of Moore's Law.

5. **Description:** This proposed project will explore the use of additive manufacturing for the advancement of microwave circuits. The use of additive tools and processes, such as ink jet printing, aerosol jet printing, nano-imprint lithography, and nScrypt printing, should be used along with traditional fabrication techniques. Existing procedures for microwave device testing will be used to analyze and compare these devices. It is anticipated that a willingness to obtain multi-disciplinary academic excellence, drawing primarily from electrical engineering, materials science, and chemistry, will be required for graduate level research success.

6. **Research Classification/Restrictions:** The research performed on this project is anticipated to be mostly fundamental in nature, with no inherent publication or presentation restrictions. There may be aspects of requirements analysis or comparison to state-of-the-art devices that have public release or export control restrictions.

7. **Eligible Research Institutions:** Universities (DAGSI) and AFIT

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