# Outstanding Young Engineer Award:

This award recognizes MTT-S members, who have distinguished themselves through technical achievements, service to the MTT-S, or a combination of both. Nominees must not have reached their 39th birthday and must be an MTT-S member at the time of nomination. This year's recipients are **Andrea Alu, Dimitrios Peroulis and Mona Jarrahi.**

## Dimitrios Peroulis

*"For outstanding early career contributions to the microwave profession"*

Prof. Peroulis focuses on reconfigurable electronics for adaptive communications, signal intelligence, and harsh-environment MEMS sensors. He has been a PI/co-PI in over 55 projects funded by government agencies and industry in these areas. He has been a key contributor to numerous filter-centric programs that have resulted in the first widely-tunable (tuning range >3:1) pre-select radio filters with unprecedented quality factors (Q > 1; 000) and power handling (1-10 W) for high frequency applications (1-30 GHz). A wide variety of reconfigurable filters with simultaneously adaptable features including frequency, bandwidth, rejection level, filter order, and group delay have been demonstrated over the past five years. His group has co-invented and is actively developing a novel filter synthesis method based on Field Programmable Filter Arrays (FPFAs). Inspired by FPGAs in digital systems, FPFAs are based on coupled resonators and multiple ports in order to enable reutilization of the same adaptive resonators to support diverse needs for dissimilar systems. Arbitrary operational modes and multiple operational channels may be created and reconfigured at will.

Besides RF front-end filters, Prof. Peroulis' team has contributed novel high-efficiency power amplifier designs (2011-2012 awards in the MTT-S International Microwave Symposia Student Design Competitions) and co-designs with reconfigurable RF devices. Prof. Peroulis has also been working in the fields of wireless MEMS sensors and energy harvesting. His team demonstrated the first wireless battery-free high-temperature MEMS sensors for health monitoring of rotating machinery. These sensors continuously monitor the true temperature of a rotating device to over 300°C or 550°C (depending on the design) and wirelessly transmit it to a base station. These sensors are based on well-established silicon processing for low-cost high-yield manufacturing. They have demonstrated robust operation for >109 cycles and continuous loading for several months without failure. These sensors have now been licensed to a start-up company (Bearing Analytics) for further development and commercialization.

Prof. Peroulis students have received numerous student paper awards and several student research-based scholarships. Furthermore, in 2012 his team's work on energy harvesting won the Outstanding Paper Award by the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (Ferroelectrics section). He is the Deputy Director of the Birck Nanotechnology Center at Purdue University and a member of the Purdue Teaching Academy. He has also received 10 teaching awards including the HKN national teaching award (2010 HKN C. Holmes MacDonald Outstanding Teaching Award) and the 2010 Charles B. Murphy award, which is Purdue University's highest undergraduate teaching honor.