## IEEE AWPL Special Cluster 2023 on "Recent Advances in Conformal Metasurfaces"

Exotic electromagnetic applications such as cloaking, illusions, and camouflage as well as antenna systems conformal to various platforms require next-generation metasurface design approaches that can accommodate arbitrarily-shaped geometries. Early works employed holographic approaches to design conformal impedance surfaces, while more recently, accurate field-based methods have been developed to design conformal metasurfaces. Both impenetrable and penetrable boundary conditions have been used to model conformal metasurfaces, which can both be described using an idealized sheet boundary known as the generalized sheet transition condition or GSTC. Promising new design strategies for metasurfaces are on the horizon involving novel numerical techniques, advanced analytical tools, inverse design, and machine learning algorithms. These new design strategies promise a new generation of ultra-thin, conformal devices including antennas, reconfigurable intelligent surfaces are under development. These techniques include additive manufacturing, laser-etched copper foil on flexible substrates, and electroplating of plastic materials. Therefore, it is an opportune time to showcase the research accomplishments within this emerging area in this special cluster.

The special cluster will present recent advances in conformal metasurfaces and provide visionary views of this technology's potential in electromagnetic systems. Contributions are sought in, but not limited to, the following topics:

- Electromagnetic modelling for design, analysis, or synthesis of conformal metasurfaces.
- Conformal metasurfaces for antenna applications.
- Electromagnetic scattering control (illusions, cloaks, camouflage, absorbers) based on conformal metasurfaces.
- Fabrication techniques for conformal metasurfaces including additive manufacturing approaches, laser etched copper foils, electroplating of printed dielectrics etc.
- Smart conformal metasurfaces for 5G/6G communications channel optimization.
- Inverse design and machine-learning strategies for conformal metasurface design.
- Reduced-order models for conformal metasurfaces

The guest editors of this focused cluster are:

- Jordan Budhu, Virginia Tech, USA,
- Anthony Grbic, University of Michigan, USA,

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Prospective authors are encouraged to contact the Guest Editors for any questions or to determine the suitability of their contribution for this special cluster. Papers should be prepared following the same submission instructions as for regular IEEE AWPL manuscripts (four-pages technical content maximum and one reference page, double-column, IEEE format), available via the Information for Authors website (<u>http://awpl.eleceng.adelaide.edu.au/authors.htm</u>). The authors should indicate in the cover letter to the Editor-in-Chief that the manuscript is being submitted in response to the Call for Papers for the focused cluster. Prospective authors should refer to the timeline below for key dates.

## Key dates:

- Submission deadline: March 31, 2023
- First decision: May 15, 2023
- Revised manuscripts deadline: June 15, 2023
- Final decision: July 30, 2023
- Final manuscripts due by: September 1, 2023
- Online publication: Shortly after final manuscript submission
- Cluster publication: November 2023 issue of AWPL