Averatek Partnership with Rogers Corporation

ROGERS CORPORATION + Averatek

Photos provided by Rogers Corporation

TMM™ 3-D Shapes

The Averatek Semi-Additive Process (A-SAP™) plays an important role in the Rogers 3-D imaging and plating program. The capability to create 3-D circuits and components offers a unique opportunity: new design freedom for RF applications is not just possible, but economically feasible.

Shown here are Rogers proprietary ceramic thermoset microwave material (TMM™) polymer composites designed for high-frequency applications. They were introduced at the IPC APEX Expo industry event in January 2022 with samples:

Video: Rogers webinar steps through the manufacturing process
Additive Manufacturing Solutions for High Performance 3D RF Circuits (on24.com)

Laser-Activated Plating

- Technique involves coating part in chemistry that is 'activated' by laser energy – no dopant in substrate
- Requires laser line-of-sight rather than a nozzle close to the substrate – more design freedom
- After activation step, goes through standard electroless and electrolytic plating
- Replicates performance of regular electroplated parts

Various conformal additive copper metallization with Rogers Radix™ and TMM® Materials

Samples courtesy of Averatek

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Video: Rogers Corporation New Product Development Group Leader Trevor Polidore with Averatek Vice President Tara Dunn - click on this link RealTime with... IPC APEX EXPO 2022 then use key words *New Materials and Additive Manufacturing*

3-D Imaging and Plating

Rogers Corporation TMM™

Copper patch antenna patterned directly on TMM substrate

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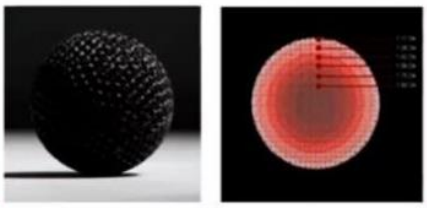
photo provided by Rogers Corporation

Rogers Data Sheet for 3D-Printable Dielectric Material
[Data Sheet - Radix 2.8dk Printable Dielectric Data Sheet.pdf 2021.pdf with Averatek note.pdf]

Video: How FORTIFY produces breakthrough printing for Rogers corporation - with the Averatek Semi-Additive Process (A-SAP™): [Development of a 3D Printable Photopolymer for RF Applications - YouTube]

Rogers Radix™ 3D-printable dielectric materials provide a scalable solution to manufacturing complex dielectric components that cannot be made with traditional fabrication processes

Gradient Index (GRIN) Lenses



- High directivity lens antennas with passive steering capability
- Field-of-view enhancing lenses for flat-panel antennas
- Feature sizes compatible for GRIN structures up to 40GHz
  - Evaluating potential up to E-band

Volumetric and Conformal Circuits

- SWaP optimization and flexibility
- True multi-dimensional design freedom
  - Print vias in-situ, no drilling
  - Conformal radiating elements
- Compatible with laser-activated electroless processes and conductive inks through aerosol jet deposition

Selection from Fortify webinar recording: *Development of a 3D Printable Photopolymer for RF Applications 2.15.2022*

White Paper: published in Microwave Journal February 2022
[Fortify_3D-Printed-Dielectric-Lenses-White-Paper_RevB.pdf (3dfortify.com)]

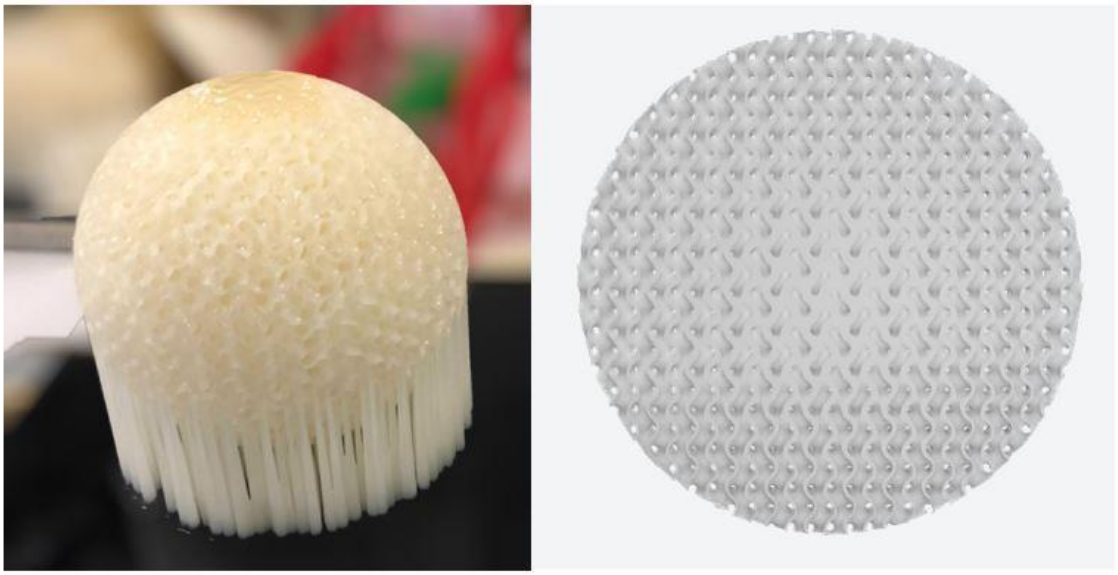


Figure 14: (Left) 3D printed lens on supports. (Right) The cleaned and cured lens