Development of a Lightweight, Monolithic, Aspheric Mirror Utilizing FDM Technology

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Prototyping Aspheric Reflectors

Creating freeform optics capable of efficiently reflecting UVC light is difficult and often very expensive, due to the nature of the UVC portion of the spectrum. However, utilizing FDM rapid prototyping and electroplating fabrication methods, a quicker, cheaper technique has been created.

Impact

Aspheric UVC-reflective mirrors will can be prototyped quickly at a much lower cost than conventional optics.

Acknowledgements
Dr. Brian Landrum, Mr. Darell Engelhaupt, Dr. Lisa Blackwell, Ted Rogers and Chris Underwood for their time and expertise.

Manufacturing Process

• Near form-factor shape created using FDM RP
• Optical surface is silvered
• Electroplating initialized
• Single Point Diamond Turn to high quality surface finish

Conclusion

• Spherical optics have been plated, SPDT and are in initial stages of testing.
• Freeform optics have been successfully created and plated.