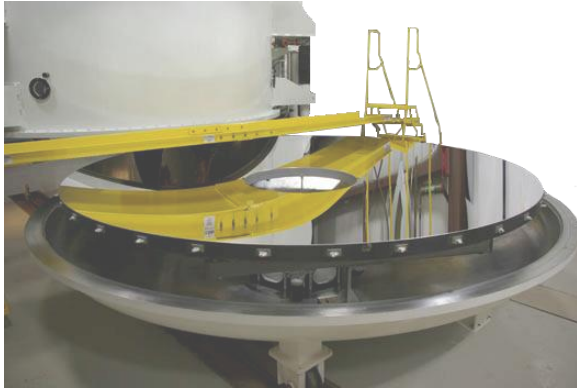


## Dynavac Develops Multi-Layer Silver Coating for Astronomical Telescope Mirror at KAFB Facility



**Hingham, MA – September 16, 2020 – [Dynavac](#)** has successfully developed and deposited a multi-layer silver coating onto a 3.5-meter astronomical mirror at the Air Force Research Lab's Starfire Optical Range at Kirtland Air Force Base, New Mexico. This significant milestone is expected to establish a new industry standard in producing silver coatings for large-area mirror applications.

“Given its superior reflectivity and emissivity properties, there has been longstanding interest in using sputtered silver for reflective coatings versus traditional evaporated aluminum—especially in the most demanding visible and infrared mirror applications,” said Dr. Ramya Chandrasekaran, who led Dynavac’s team of engineers on this project. “Several technical and financial risks, however, have precluded widespread use in the astronomical telescope community.”

Boeing, the prime contractor for AFRL at Starfire Optical Range approached Dynavac to explore the feasibility of converting an existing evaporation system to magnetron sputtering to enable the production of protected silver coatings. Its evaporation system was originally built by Dynavac in 2008, and had been successfully coating mirrors with reflective aluminum. The basic infrastructure of the system, which is comprised of a bell-jar chamber with removable base well and vacuum pumping system, provided a solid platform on which to make the conversion. The project required an intricate marriage of process development and hardware design to meet the demanding film property requirements and maintain stable film stoichiometry. Installation of a new control system completely automated the coating process, ensuring exacting accuracy and repeatability.

Dynavac’s skilled installation technicians and engineers spent several months on-site in Albuquerque converting the chamber and optimizing the protected silver coating process. In June 2019, the team deposited a multi-layer film onto the mirror, producing superior reflectivity ( $R_{\text{average}}(450\text{--}800\text{ nm}) > 94\%$  and  $R_{\text{average}}(800\text{--}1200\text{ nm}) > 97\%$ ) and adhesion across the entire surface of the mirror.

Dynavac is one of the few companies in the world with the ability to design, engineer and manufacture custom, [large-scale telescope mirror deposition systems](#). In addition to the Albuquerque system, the company has commissioned systems at Lowell Observatory's Discovery Channel Telescope in Arizona, Observatorio Astrofisico de Javalambre (OAJ) in Spain, and The Boeing Company in Hawaii.

"This project reinforces Dynavac's depth of skill and expertise in executing complex, mission-critical programs," said Dynavac's President and CEO, Tom Foley. "We're excited to be able to help USAF advance its telescopic imaging capabilities and pave the way for new astronomical discoveries."

## About Dynavac

Dynavac has been designing and manufacturing high-vacuum systems for thin film deposition, space simulation, and custom applications for over 30 years. The company's engineers are recognized throughout the industry for their expertise in high vacuum technology, machine design, and process technology. Its engineering expertise is matched by an extensive U.S.-based manufacturing and field installation capabilities. Dynavac supports installations for customers in a wide variety of industries around the world, visit [www.dynavac.com](http://www.dynavac.com)



110 Industrial Park Rd  
Hingham MA 02043  
781-740-8600  
[www.dynavac.com](http://www.dynavac.com)

For thin film solutions contact:  
Steve Chiavaroli  
[schiavaroli@dynavac.com](mailto:schiavaroli@dynavac.com)  
781-413-1037