

Development of stacked core technology for the fabrication of deep lightweight UV quality space mirrors

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ABSTRACT

Decadal Survey stated that an advanced large-aperture ultraviolet, optical, near-infrared (UVOIR) telescope is required to enable the next generation of compelling astrophysics and exoplanet science; and, that present technology is not mature enough to affordably build and launch any potential UVOIR mission concept. Under Science and Technology funding, NASA's Marshall Space Flight Center (MSFC) and ITT Exelis have developed a more cost effective process to make up to 4m monolithic spaceflight UV quality, low areal density, thermally and dynamically stable primary mirrors. A proof of concept mirror was completed at ITT Exelis and tested down to 250K at MSFC which would allow imaging out to 2.5 microns. The parameters and test results of this concept mirror will be shown. The scale-up process will be discussed and the technology development path to a 4m mirror system by 2018 will also be outlined.