NASA's Next Generation Space Telescope Is Coming Together

PALO ALTO, Calif., Feb. 3, 2014 /PRNewswire/ -- An infrared camera designed with University of Arizona and Lockheed Martin [NYSE:LMT] know-how, which will form the heart of NASA's James Webb Space Telescope (JWST), has joined three other instruments at NASA's Goddard Space Flight Center (GSFC) to be mounted in the nascent telescope structure.

The Near Infrared Camera (NIRCam) will function as the central imaging component of JWST, which will replace the Hubble Space Telescope toward the end of this decade. Designated one of the space agency's three highest mission priorities, the Webb telescope is a joint project of NASA, the European Space Agency and the Canadian Space Agency.

NIRCam was designed, built, and tested by a UA / Lockheed Martin team at the company's Advanced Technology Center in Palo Alto, Calif., under the leadership of Principal Investigator Marcia Rieke. She is a Regents' Professor at the UA Department of Astronomy/Steward Observatory. Lockheed Martin is responsible for the optical, mechanical, structural, thermal and electronic precision mechanisms and the control software of NIRCam, while its advanced infrared detector arrays come from Teledyne Imaging Systems.

NIRCam's delivery to Goddard Space Flight Center marks the first time all of James Webb's instruments have come together. "We are excited that NIRCam is about to be integrated with the Webb Telescope hardware," said Jeff Vanden Beukel, Lockheed Martin NIRCam program director. "Next, it and the other instruments will be tested to prove their ability to function as a unit."

"Completing all of the instruments is one of the most daunting milestones for a large science mission," said George Rieke, a Regents' Professor in the UA Departments of Astronomy and of Planetary Sciences. "Reaching this milestone keeps the telescope on schedule for launch in late 2018."

As the space telescope's prime camera, NIRCam will make JWST the most powerful space telescope ever built, enabling it to peer deeper into space and further back in time than any other instrument before. With its 6.5-meter (21-foot) mirror, JWST will allow observation of the most distant objects in the universe.

"The instrument operates out to wavelengths about ten times that of visible light, letting it search for the first galaxies. It is the cosmic redshift that has moved the outputs of these 'first light' sources into the infrared where NIRCam operates. We will survey selected regions on the sky to find candidates; the other instruments on JWST can then probe these objects in detail to test if they really are that young," Marcia Rieke explained. "The instrument can also peer through the clouds of gas and dust that hide the first stages when stars and planets are born and will provide insights to how planetary systems around distant stars form and evolve."

"NIRCam embodies many cutting-edge technologies, such as the infrared detector arrays themselves, a complex optical system based on lenses rather than the mirrors used in most infrared instruments, and devices to measure the optical performance of the JWST telescope and allow adjustments to keep it operating correctly."

Upon launch, JWST will be operated as an observatory open by competitive proposal to astronomers worldwide. The astronomy community is eagerly anticipating data from the mission, which is not only much larger than HST but covers the longer-wavelength infrared spectral range with unprecedented capabilities.

The arrival at Goddard and "marriage" of all the science instruments that will make up the instrument suite for the James Webb Space Telescope (JWST) will be celebrated today with a special event including NASA Administrator Charles Bolden and Maryland Senator Barbara Mikulski.

Headquartered in Bethesda, Md., Lockheed Martin is a global security and aerospace company that employs approximately 115,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation's net sales for 2013 were $45.4 billion.

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