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'Korea, US can create synergy in space industry': NASA ambassador

Space expert positively views Korea's Mars 2045 vision

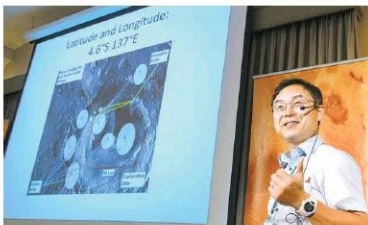
By Baek Byung-yul
baekby@koreatimes.co.kr

President Yoon Suk Yeol's ambitious vision to send a spacecraft to Mars by 2045 will be easier to achieve if Korea further strengthens cooperation with the United States, which has the world's leading space technology, according to an ambassador of the U.S. National Aeronautics and Space Administration (NASA).

"NASA values international cooperation with other countries including Korea. This is because the cooperation can create synergy and technologies from other countries can greatly help NASA as well, such as increasing the success rate of space exploration. Space exploration needs to proceed in a way that can benefit both countries, and the Danuri lunar orbiter is a great success story," Paul Yun, NASA's solar system ambassador, told The Korea Times in a recent email interview.

Yun, who also serves as a professor of mathematics at El Camino College in California, has been promoting NASA's space exploration activities as an ambassador since 2012. The ambassador cited Danuri, also known as the Korean Pathfinder Lunar Orbiter (KPLO) that has been conducting a year-long scientific research project circling the moon since Dec. 28, 2022, as an example of the collaborative efforts between the two countries.

The lunar orbiter was launched by SpaceX's Falcon 9 rocket at the U.S. Cape Canaveral Space Force Station in Florida in August, 2022. The space-



Paul Yun, a solar system ambassador of NASA, speaks in Houston about the U.S. space agency's candidate areas for the landing of humans on Mars by the late 2030s or early 2040s, in this 2015 file photo.

Courtesy of NASA

Interview

craft also carried NASA's ShadowCam device to capture images of the moon's permanently shadowed region.

"Danuri was carried by the SpaceX projectile, which was also made through the help of NASA and NASA's experience also helped Korea to safely send Danuri into lunar orbit. Korea has installed NASA's ShadowCam device on Danuri, helping the U.S. agency explore the amount of ice in the Antarctic region and human landing candidates. Collaboration with NASA, which has decades of experience in space exploration, will help both countries and increase the success rate of Korea's space exploration," the ambassador said.

Yun also gave a positive evaluation of the Korean president's space exploration vision, saying that Korea also has to ride on the space industry, which advanced countries are trying to foster as one of their next growth engines.

On Nov. 28, 2022, Yoon announced that Korea will take a leap forward to become one of the world's space powerhouses by around 2045. To that end, the country aims to send a spacecraft to the moon by 2032 for resource mining and land on Mars by 2045.

The president brought up such an ambitious goal as he believes "a country with a vision for space can lead the global economy and solve the problems humans are facing."

"Bank of America estimated the space economy to be worth \$3 trillion around the 2050s. The space economy is on the rise every year, focusing on the space internet and telecommunication services, which are essential for the Fourth Industrial Revolution. Space tourism and resource exploration are also expected to drive the growth of the space economy," Yun said, adding that the space economy is a challenge and an opportunity for the development of a nation.

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He said he was impressed by the rapid development of Korea's space industry.

"Considering the development speed of Korea's own space rocket, it is expected to have the ability to carry a spacecraft to Mars by 2045. There were many negative views when the Naro space rocket was launched a decade ago, but the success of the Nuri space rocket in 2022 proved that the performance of Korea's launch vehicle is rapidly improving," Yun said. "In more than 20 years, I estimate that the country's launch vehicle will have the ability to explore deep space

beyond Mars."

The professor added that NASA's robotic and human moon and Mars exploration program called Artemis will also have a positive impact on Korea's 2045 plan.

"Through NASA's Artemis program, the U.S. is preparing for crewed lunar landing in 2025 and crewed mission to Mars in the late 2030s. I can say the success of Danuri has helped establish mutual trust between Korea's aerospace science community and NASA. NASA will continue to explore Mars in the 2040s and collaborate with NASA is expected to greatly increase the success rate of Korea's 2045 Mars landing plan," he said.

Fostering astronauts is top priority

When asked what kinds of efforts Korea has to make to accomplish the vision, Yun emphasized the need for programs to foster astronauts.

"To become a leading nation in the space industry, it is necessary to nurture astronauts as well as launch vehicles and satellites. Currently, leading countries are carrying out many missions through astronauts. I think that the launch of astronaut fostering programs from a long-term perspective at the national level will pave the way for Korea to play a leading role in the industry. This policy will ultimately help increase the number of private

astronauts," he said.

The ambassador also advised that Korea and its people need to be more patient about failures that could occur in the space exploration process.

"The possibility of high failure is always there in the space exploration process and I think the only way to succeed in the space sector is to humbly accept it as a step in the development process. This will eventually increase the probability of success in the next attempt, which will be conducted after thorough analysis and preparation," he said. "When exploration fails, it is important for the people and politicians to have a mature attitude to trust and have patience in researchers."