

# An ultraviolet instrument for ESA's Jupiter mission

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Southwest Research Institute packages its Ultraviolet Spectrograph (UVS) for delivery and integration onto the European Space Agency's JUICE spacecraft. As part of a 10-instrument payload to study Jupiter and its large moons, UVS will be used to study the composition and structure of the atmospheres of these bodies and how they interact with Jupiter's massive magnetosphere. Credit: Southwest Research Institute

An ultraviolet spectrograph (UVS) designed and built by Southwest Research Institute (SwRI) is the first scientific instrument to be delivered for integration onto the European Space Agency's Jupiter Icy Moon Explorer (JUICE) spacecraft. Scheduled to launch in 2022 and arrive at Jupiter in 2030, JUICE will spend at least three years making detailed observations in the Jovian system before going into orbit around the solar system's largest moon, Ganymede.

Aboard JUICE, UVS will get close-up views of the Galilean moons Europa, Ganymede and Callisto, all thought to host liquid water beneath their icy surfaces. UVS will record [ultraviolet light](#) emitted, transmitted and reflected by these bodies, revealing the composition of their surfaces and tenuous atmospheres and how they interact with

Jupiter and its giant magnetosphere.

"It has been a huge team effort to get this instrument—known as JUICE-UVS—built, tested and delivered," said Steven Persyn, project manager for JUICE-UVS and an assistant director in SwRI's Space Science and Engineering Division. "In 2013, UVS was selected to represent NASA on the first ESA-led [mission](#) to an outer planet. Meeting both NASA's and ESA's specifications was challenging, but we did it."

UVS will be one of 10 science instruments and 11 investigations for the JUICE mission. The mission has overarching goals of investigating potentially habitable worlds around the gas giant, as well as, studying the Jupiter system as an archetype for gas giants in our solar system and beyond.

SwRI has provided ultraviolet spectrographs for other spacecraft, including ESA's Rosetta comet orbiter, NASA's New Horizons spacecraft to Pluto and the Kuiper Belt, the Lunar Reconnaissance Orbiter, and the Juno [spacecraft](#) now orbiting Jupiter. Another UVS is under construction for NASA's Europa Clipper mission, scheduled to launch not long after JUICE.

"JUICE-UVS is the fifth in this series of SwRI-built ultraviolet spectrographs, and it benefits greatly from the design experience gained by our team from the Juno-UVS instrument, which is currently operating in Jupiter's harsh radiation environment," Persyn said. "Each successive instrument we build is more capable than its predecessor."

Provided by Southwest Research Institute

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