

## Temporal changes in the infrared molecular spectrum of a Magellanic carbon star

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The mid-infrared spectrum of a carbon star in the Large Magellanic Cloud (LMC) has changed substantially between a recent observation with the Medium-Resolution Spectrometer (MRS) on the Mid-Infrared Instrument aboard JWST and a spectrum obtained over 18 years ago with the Infrared Spectrograph on the Spitzer Space Telescope. The JWST observation is part of a program to capitalize on the spectral resolution of the MRS to study the molecular absorption bands in nine carbon stars in the LMC. The sample spans a range of colors and includes relatively dust-free semi-regular variables and more dust-enshrouded Mira variables. The two spectra obtained so far straddle the boundary between these two groups, and the semi-regular variable looks much as it did when observed with Spitzer. In the Mira, however, the acetylene band at 7.5  $\mu\text{m}$  has nearly vanished, the CO at 5  $\mu\text{m}$  is weaker, and a new band stretching from 8.5 to 11.5  $\mu\text{m}$  has appeared. We have not yet identified this band (at the time we submitted this abstract), but it is real. The overall brightness of the star in the mid-infrared remains approximately the same. This change raises a host of questions about the evolution of carbon stars and underscores the importance of spectroscopic monitoring to better understand their behavior over time scales of decades.

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