

DIY SCIENCE FOR PLANETARY DISCOVERY

WHAT IS IT?

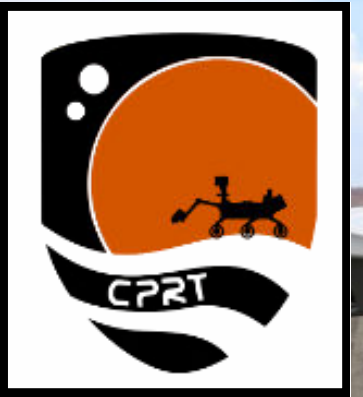
The Carleton University Robotics Team (CPRT) built a custom Raman spectrometer intended to ride atop a rover and search for signs of life.

MILAN DJORDJEVIC

EMILY CAUSI

WILLOW CARTWRIGHT

JADE REMPEL-FACEY



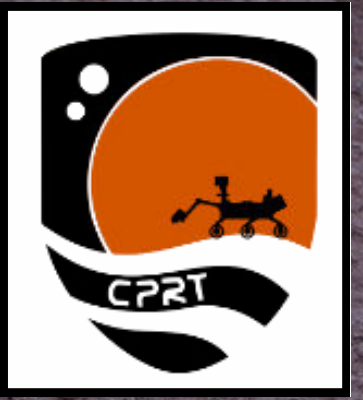
ROVER TOP RAMAN

RAMAN DETECTING SOIL

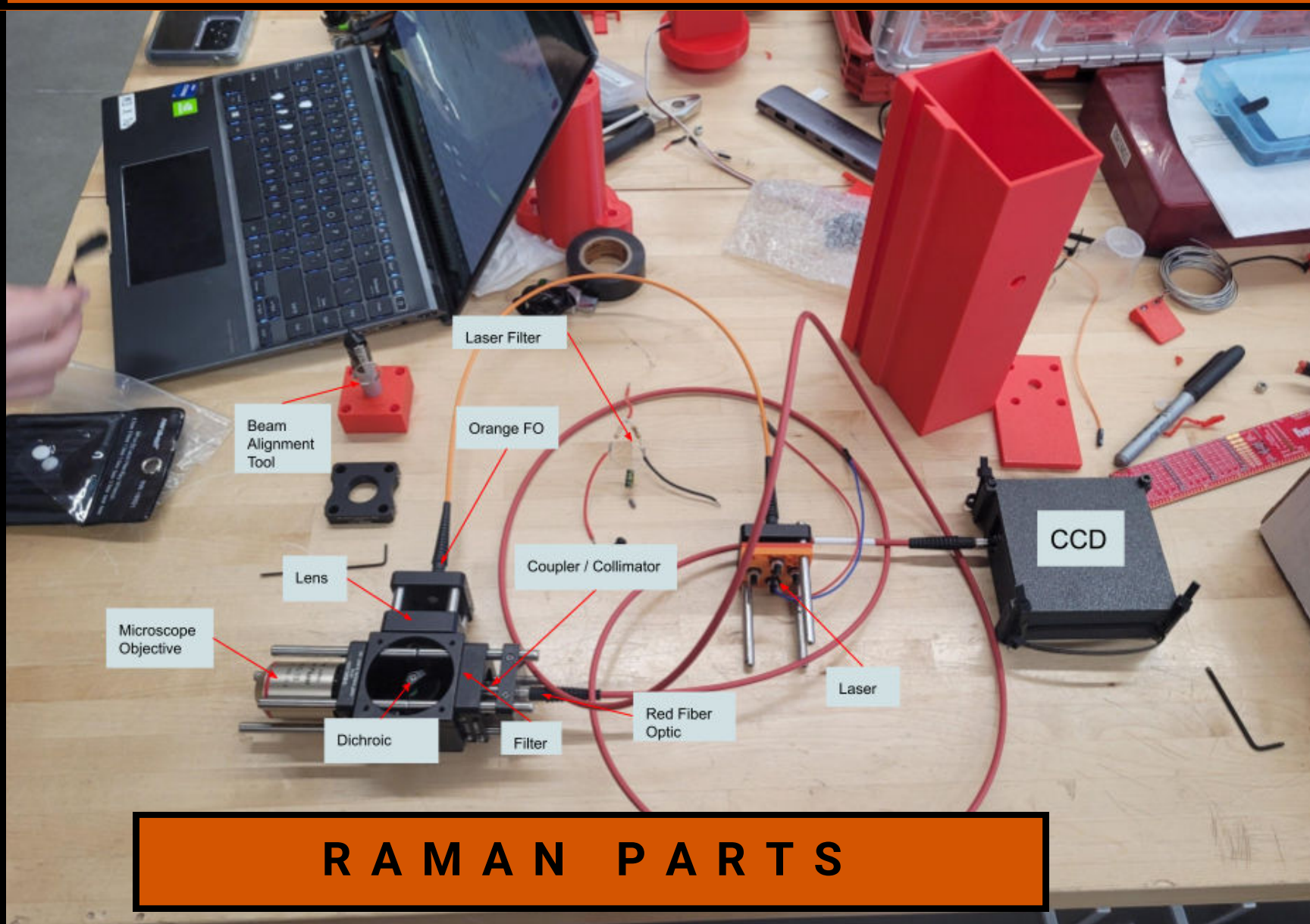
The Carleton University Robotics Team (CPRT) developed a laser suite which used a 785nm laser, along with a CCD and accompanying software from SpectraWizard. This laser was used to excite the particles in the 'Mars-like' soil, to identify tell-tale molecules. In our search, we were able to yield spectra corresponding to molecular vibrations of Carbon-Carbon bonds and Carbon-Hydrogen bonds.

785nm was selected in order to best target these high-energy bonds. These particular bonds are present in sugars. In our science suite, we looked for carotenoids, which are sugars that occur only due to organic processes. The SpectraWizard software was essential to interpreting these readings, despite the less-than-ideal environment.

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SAMPLE FROM MDRS



RAMAN PARTS



SAFETY FEATURES

Our Raman spectrometer was field tested during a space focused competition in Utah (Mars Desert Research Station). The integration of sample collection and real time spectroscopy helped our team stand out against competitors. The team began this project in the hopes to use shattered light to answer the age old question...*are we alone in the universe?* Following extremely pleasing results, the team is excited about the potential uses in space advancement this will provide.



RAMAN BEING LOWERED ON ROVER

TEAM FOLLOWING COMPETITION

