



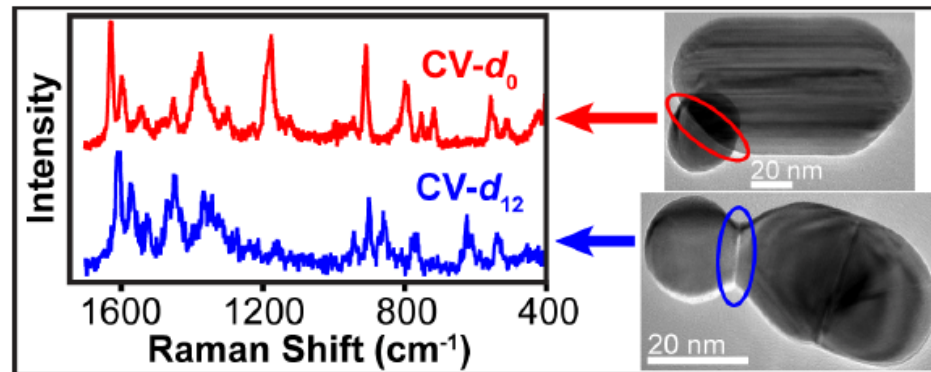
Distinguishing almost identical twin molecules



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Detecting single molecules is now possible for certain molecules using Surface Enhanced Raman Spectroscopy (SERS), but proving that a signal is due to a single molecule is challenging. In a recent study, MRSEC scientists did this for the molecule crystal violet (CV) by generating a sample that had an equal number of CV molecules mixed with deuteriated CV's (CV- d_0 and CV- d_{12}). The SERS spectra are almost identical, but a few lines are unique to one isotope or the other. By using computational methods to assign the isotopes, it was demonstrated that in most experiments, only one of the two isotopes was present.



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