

Silicon Version Of A Vinyl Cation Debuts

Disilanyl cation adds to the growing list of heavy group 14 element analogues of carbon compounds

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Chemists in Japan have unveiled the latest addition to the collection of heavy group 14 element analogs of carbon compounds: a disilicon version of the vinyl carbocation (*J. Am. Chem. Soc.*, DOI: [10.1021/ja210669n](https://doi.org/10.1021/ja210669n)). The University of Tsukuba team led by Akira Sekiguchi prepared the disilanyl cation shown by methylating a known disilyne complex, $\text{RLSi}=\text{SiR:}$, where R is a bulky silyl substituent and L is an N-heterocyclic carbene ligand incorporated for added stability. By studying the structure and bonding of the crystalline

yellow disilanyl triflate salt, the researchers found that the carbene enables the cationic charge to be delocalized throughout the carbene-silicon skeleton. Heavy group 14 cations have become an important topic in main-group chemistry during the past decade as chemists have become proficient at preparing isolable double- and triple-bonded silicon, germanium, tin, and lead analogs of alkenes and alkynes. "Disilanyl cations are intriguing targets," Sekiguchi says, "because they possess both a silyl cation and a disilene—two highly reactive functional groups. As such, they should have interesting physical, electronic, and reactive properties and lead to further discoveries in silicon chemistry."

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