



Showcasing research from Professor Bickelhaupt's group,
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Nature and strength of group-14 A-A' bonds

A-A' bonds become longer, weaker, and less sensitive to bulky substituents going down group-14 in the periodic table. Systematic increase of steric bulk of the substituents R has opposite effects on R_3C-CR_3 and $R_3Si-SiR_3$ bonds: the former becomes weaker, whereas the latter becomes stronger. Bonding analyses show how this different behavior stems from the interplay of (Pauli) repulsive and (dispersion) attractive steric mechanisms. Further increasing the size of the group-14 atoms reduces the sensitivity of the bond strength with respect to the substituents' bulkiness.

As featured in:



See F. Matthias Bickelhaupt *et al.*,
Chem. Sci., 2024, **15**, 1648.