Scientists developed a new catalyst using single atoms of platinum for breaking carbon-fluorine bonds.

Significance and Impact
This challenging reaction is important in both chemical synthesis and environmental remediation of recalcitrant fluorinated hydrocarbons.

Research Details
• Pt was loaded as single atoms on silicon carbide (SiC) using a facile, scalable, wet-chemical method developed based on anchor-site and photoreduction techniques.
• Extended X-ray Absorption Fine Structure (EXAFS) and X-ray Absorption Near Edge Structure (XANES) at NSLS-II’s ISS beamline 8-ID were used to visualize Pt atoms in the catalyst.
• High catalytic activity is attributed to an effective hydrogen spillover from isolated Pt atoms onto the SiC surface.


Work was performed in part at Brookhaven National Laboratory