Palladium-Catalyzed Carbofluoroalkylation

\[
R_1^\equiv + R_2^\equiv \text{B(OH)}_2 + R_3^I \xrightarrow{PdCl_2(PPh_3)_2 (4 \text{ mol\%})} \xrightarrow{K_2CO_3 (2.0 \text{ equiv})} R_2^R_1 \xrightarrow{\text{CH}_2\text{Cl}_2-\text{H}_2\text{O}, 50^\circ\text{C}, 12 \text{ h}} R_3^R_1
\]

Selected examples:

- \(\text{Ph} - \text{C}_4\text{F}_9 - \text{Ph}\) with 75% yield
- \(\text{OMe} - \text{C}_4\text{F}_9\) with 79% yield
- \(\text{F} - \text{C}_4\text{F}_9\) with 78% yield
- \(\text{t-Bu} - \text{C}_4\text{F}_9\) with 81% yield
- \(\text{OMe} - \text{t-Bu} - \text{C}_4\text{F}_9\) with 70% yield
- \(\text{F} - \text{t-Bu} - \text{C}_4\text{F}_9\) with 83% yield

**Significance:** The authors describe a palladium-catalyzed three-component reaction involving terminal alkenes, boronic acids, and perfluoroalkyl iodides, leading to the desired products in a highly regio- and stereocontrolled manner.

**Comment:** From a mechanistic point of view, the simultaneous addition of both aryl and \(\text{C}_{n\text{F}_m}\) groups across the triple bond in a radical-mediated process is proposed.