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Fluoroalkylcopper(I) Complexes Generated by the Carbocupration of Tetrafluoroethylene: Construction of a Tetrafluoroethylene-Bridging Structure


Construction of a Tetrafluoroethylene-Bridging Structure via Carbocupration

**Significance:** The authors report the synthesis, characterization, and synthetic application of 2-aryl-1,1,2,2-tetrafluoroethylcopper complexes. Starting with a carbocupration of tetrafluoroethylene (TFE), a variety of 1,2-difunctionalized 1,1,2,2-tetrafluoroethanes were prepared in high yields.

**Comment:** The molecular structure of the aryl–TFE–copper species was determined by X-ray crystallography and NMR analysis. Furthermore, the synthetic utility for liquid-crystalline compounds bearing a tetrafluoroethylene-bridging structure was demonstrated.

**Selected examples:**

- 97% yield
- 99% yield
- 95% yield
- 97% yield
- 92% yield
- 90% yield
- 94% yield
- 96% yield

**Synthesis of a liquid-crystalline compound:**

64% yield over 6 steps