Biscrown-Annulated TTFAQ-Dianthracene Hybrid: Synthesis, Structure, and Metal Ion Sensing

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**A Cation Sensor: All Saddled Up**

**Significance:** Anthraquinodimethane-type extended tetrathiafulvalenes (TTFAQs) are known for having a rigid, non-planar, saddle-like structure in the neutral state. Here the authors demonstrate the ability of this class of extended tetrathiafulvalenes to act as selective metal cation sensors, in particular Ba$^{2+}$.

**Comment:** Uncomplexed 1 shows a quenched fluorescence due to electron transfer between the electron-donating, thiafulvalene-containing unit, and the electron-accepting anthracenes. The reduced electron-donating capabilities experienced upon crown ether–cation binding, suppresses the electron transfer, ‘turning on’ fluorescence.

1. LDA, THF –78 °C, 2 h
2. –78 °C to r.t. overnight

R1 = \text{TMS}

K$_2$CO$_3$
THF–MeOH

\[ R^1 = \text{TMS} \quad 54\% \text{ yield} \]
\[ R^2 = \text{TMS} \quad 54\% \text{ yield} \]
\[ R^2 = \text{H} \quad 87\% \text{ yield} \]

1. fluorescent

1. non-fluorescent

OFF state

ON state

M$^{\text{II}}$