Corey–Fuchs Alkyne Synthesis

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A Synthetic Method for Formyl → Ethynyl Conversion (RCHO → RC≡CH or RC≡CR)

**Significance:** In 1972, Corey and Fuchs reported a convenient transformation of aldehydes to the corresponding one-carbon chain-extended alkynes using carbon tetrabromide and triphenylphosphine and subsequently n-BuLi. The method provides the desired alkynes in good yields.

**Comment:** The procedure comprises two steps. The synthesis of the dibromoolefins can be conducted in two ways in a Wittig-type reaction. In the second step, treatment of the prepared dibromoolefins with two equivalents n-BuLi furnishes the desired terminal alkynes. Remarkably, the intermediate lithium acetylide can also be treated with a variety of electrophiles.

**Proposed mechanism:**

**Selected examples:**

<table>
<thead>
<tr>
<th>R = Alk, Ar</th>
<th>80–95% yield</th>
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<tr>
<td>PhC≡CPh</td>
<td>80–95% yield</td>
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**Key words**

aldehydes
terminal alkynes
dibromoolefins

**Category**

Metals in Synthesis