Cyclobutadienes via an Organocascade

**Significance:** The Wang group reports an organocatalytic [2+2] cycloaddition between α,β-unsaturated aldehydes and ynals. This reaction is catalyzed by secondary amines and generates cyclobutadienes in high yields under mild conditions.

**Comment:** The authors suggest that the reaction follows a dienamine–iminium–allenamine cascade sequence furnishing cyclobutadienes as products. Typically high temperatures are required for the synthesis of cyclobutadienes. This method requires only room temperature, hence overcoming a limitation of previous methods.

**Selected examples:**
- R = Ar, o-Pr, MeBn, SiMe$_2$Ph

87% yield 84% yield 83% yield

82% yield 83% yield 78% yield

**Proposed mechanism:**

**Key words**
- cyclobutadienes
- ynals
- α,β-unsaturated aldehydes
- [2+2] cycloaddition