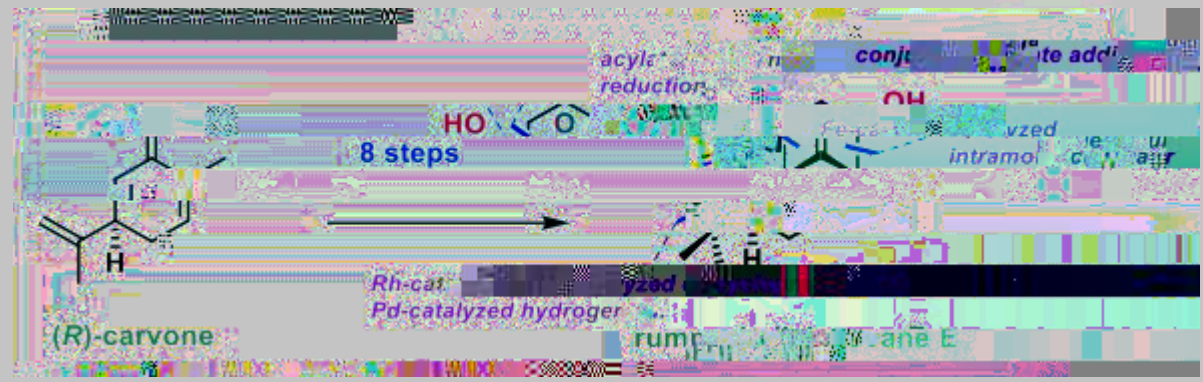


# Asymmetric Total Synthesis of Rumphelleclovane E

Guanggen Liu,<sup>1</sup> Zhiyong Zhang,<sup>1</sup> Shimin Fu,<sup>1</sup> and Bo Liu<sup>1</sup>



- 1,2-addition of an enamine to an aldehyde
- 1,4-addition of an enamine to a ketone
- C-alkylation of an enamine
- E-alkylation of an enamine
- 1,5-hydrogen shift
- 1,6-hydrogen shift
- 1,7-hydrogen shift
- 1,8-hydrogen shift

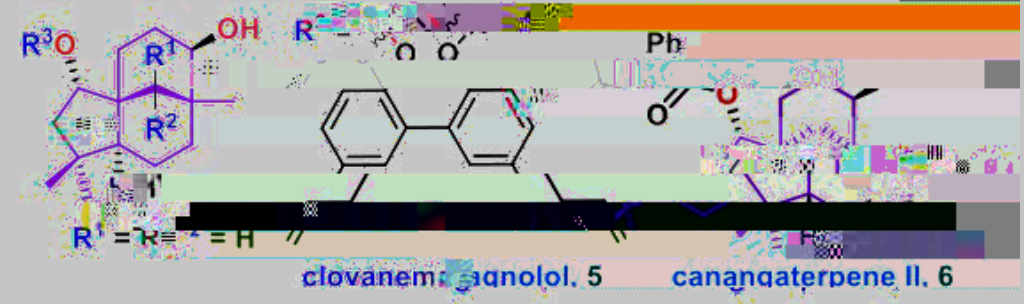
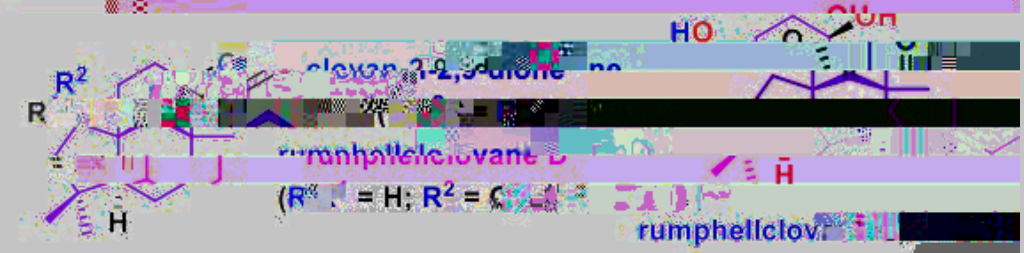
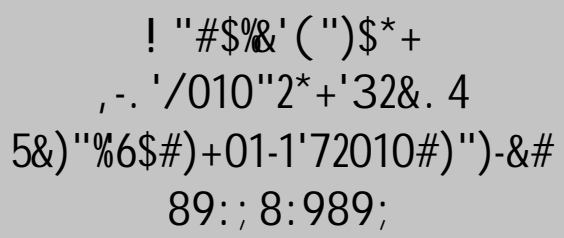


Figure 1. Asymmetric total synthesis of rumphelleclovane E.

(a) Becker et al (1965). A-AB-ABC strategy



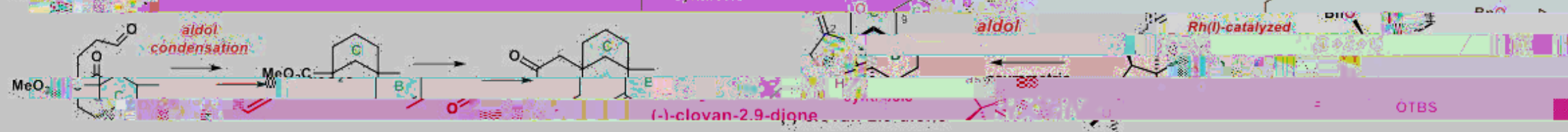
(b) Schultz et al (1965), B-BC-ABC strategy

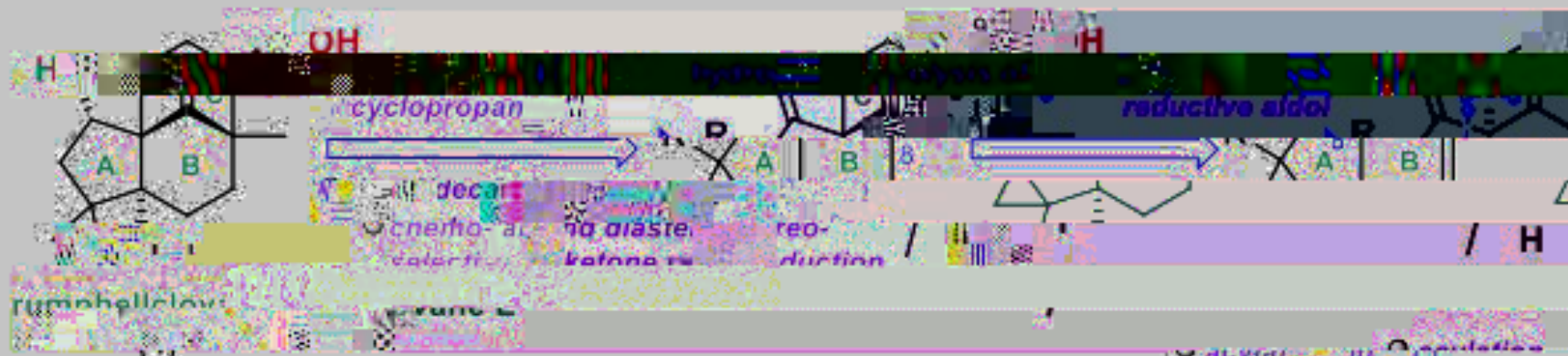


(c) Dreiding et al (1985), C-BC-ABC strategy



(d) Raphael et al (1965), C-BC-ABC strategy





R = COOEt

