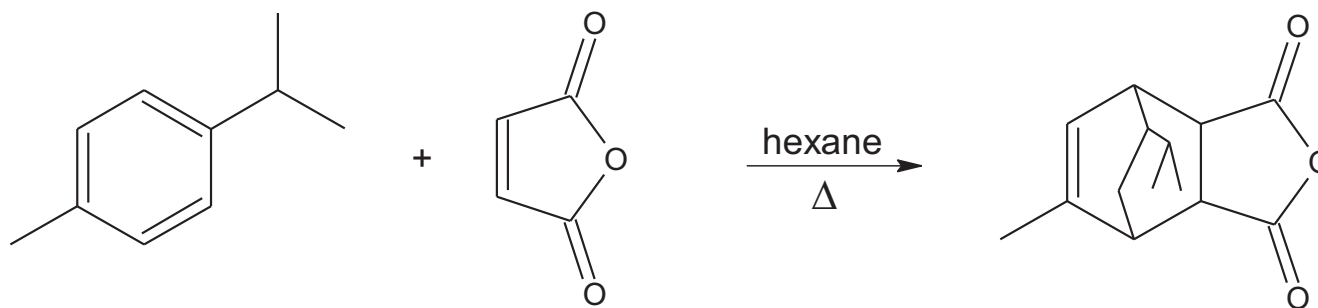


Diels-Alder Reactions

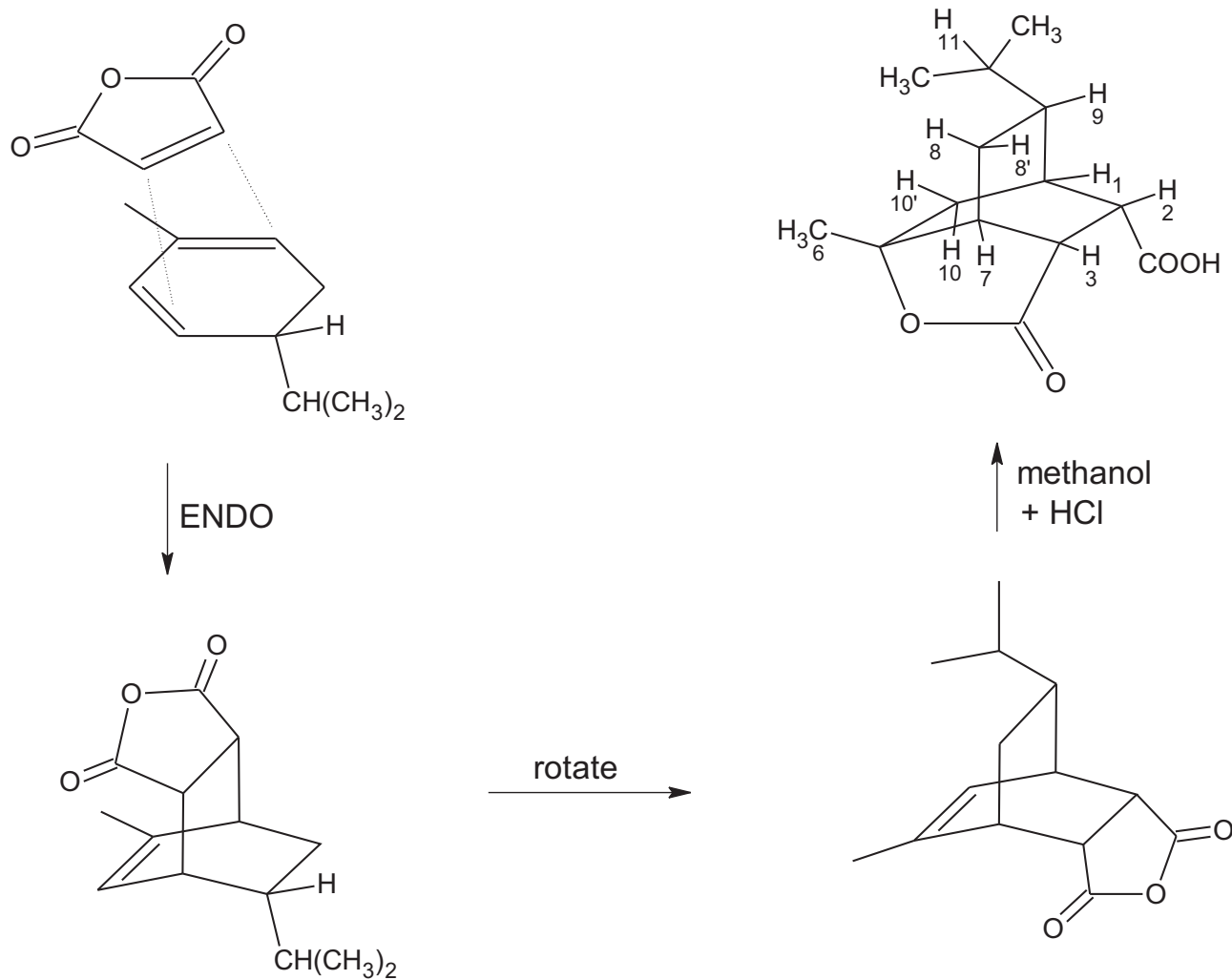
Paul Schatz and Charles G. Fry

Classic reaction of phellandrene with maleic anhydride is a lab unit in Chem 346:

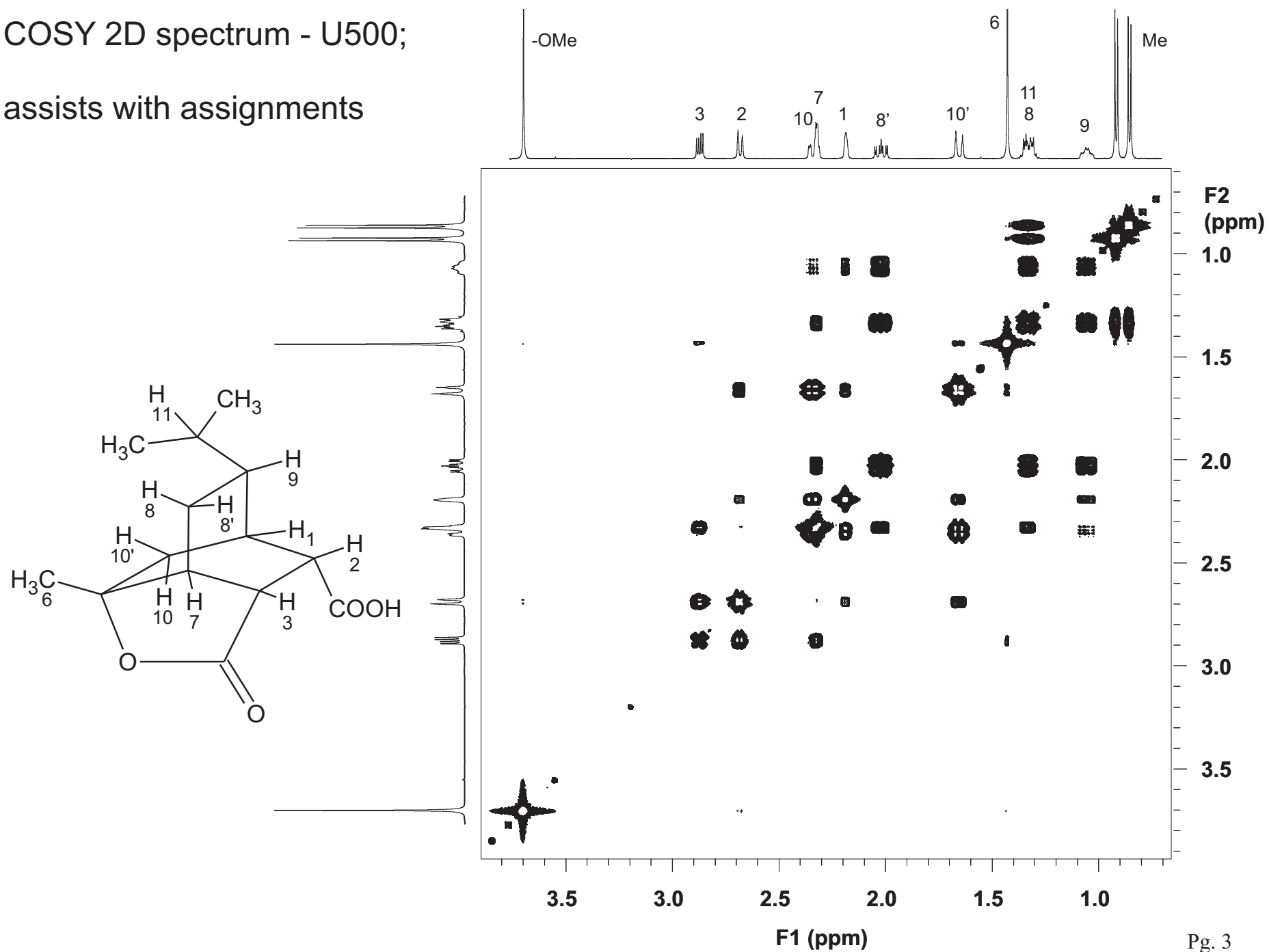


- There are four possible resulting structures (excluding enantiomers).
- Conversion to the lactone proves the Diels-Alder reaction formed the ENDO adduct.
- But the orientation of the isopropyl group is unresolved:
- Published assignments are incorrect [B. Singaram and J. Verghese, *J. Indian Chem. Soc.* **LIV**, 630-633 (1977)].

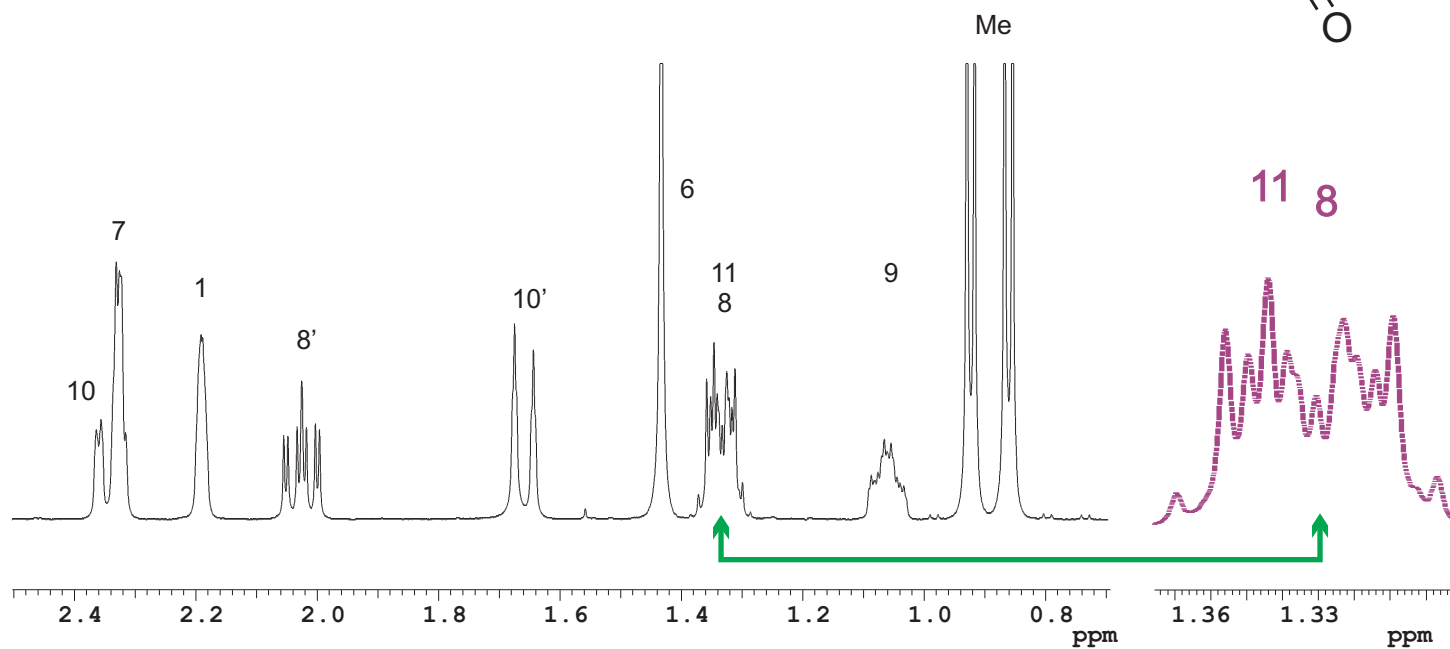
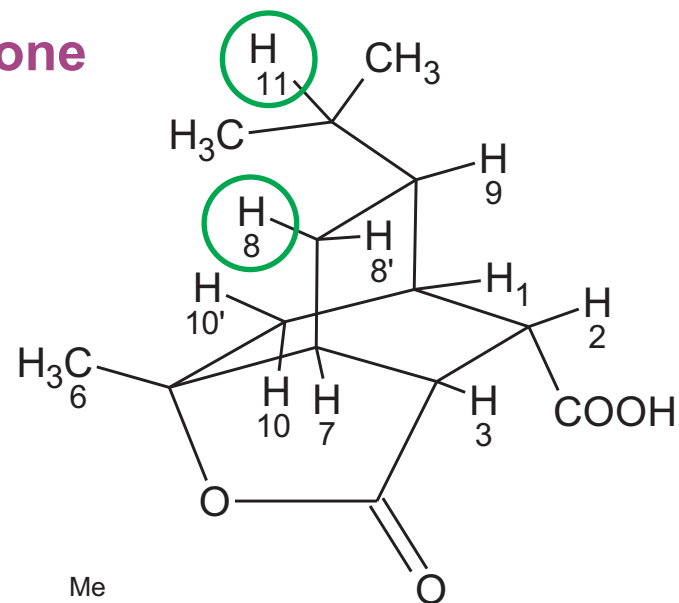
Stereochemistry of Me-Lactone



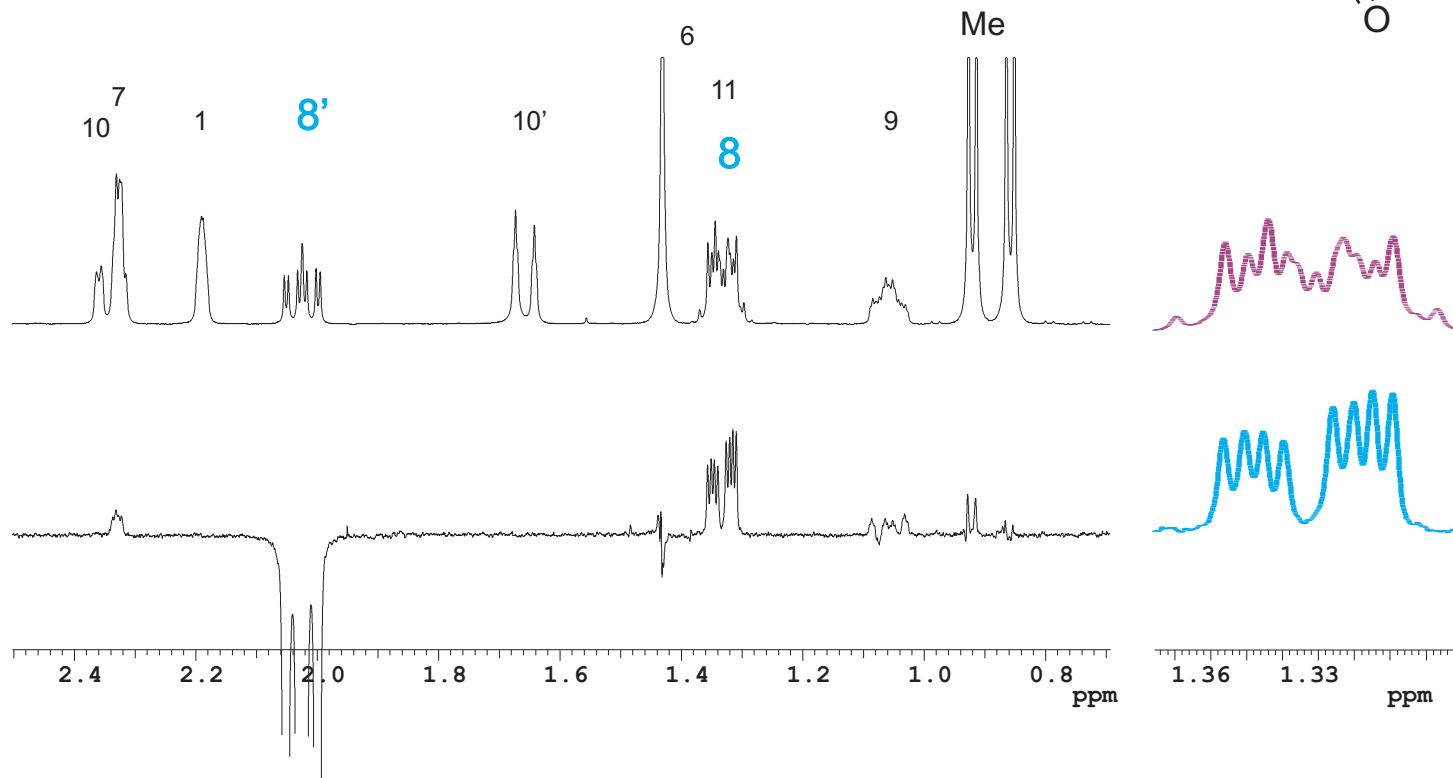
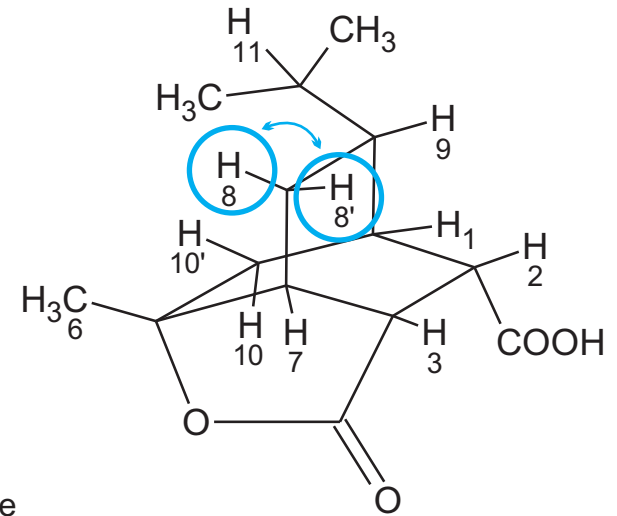
COSY 2D spectrum - U500;
assists with assignments



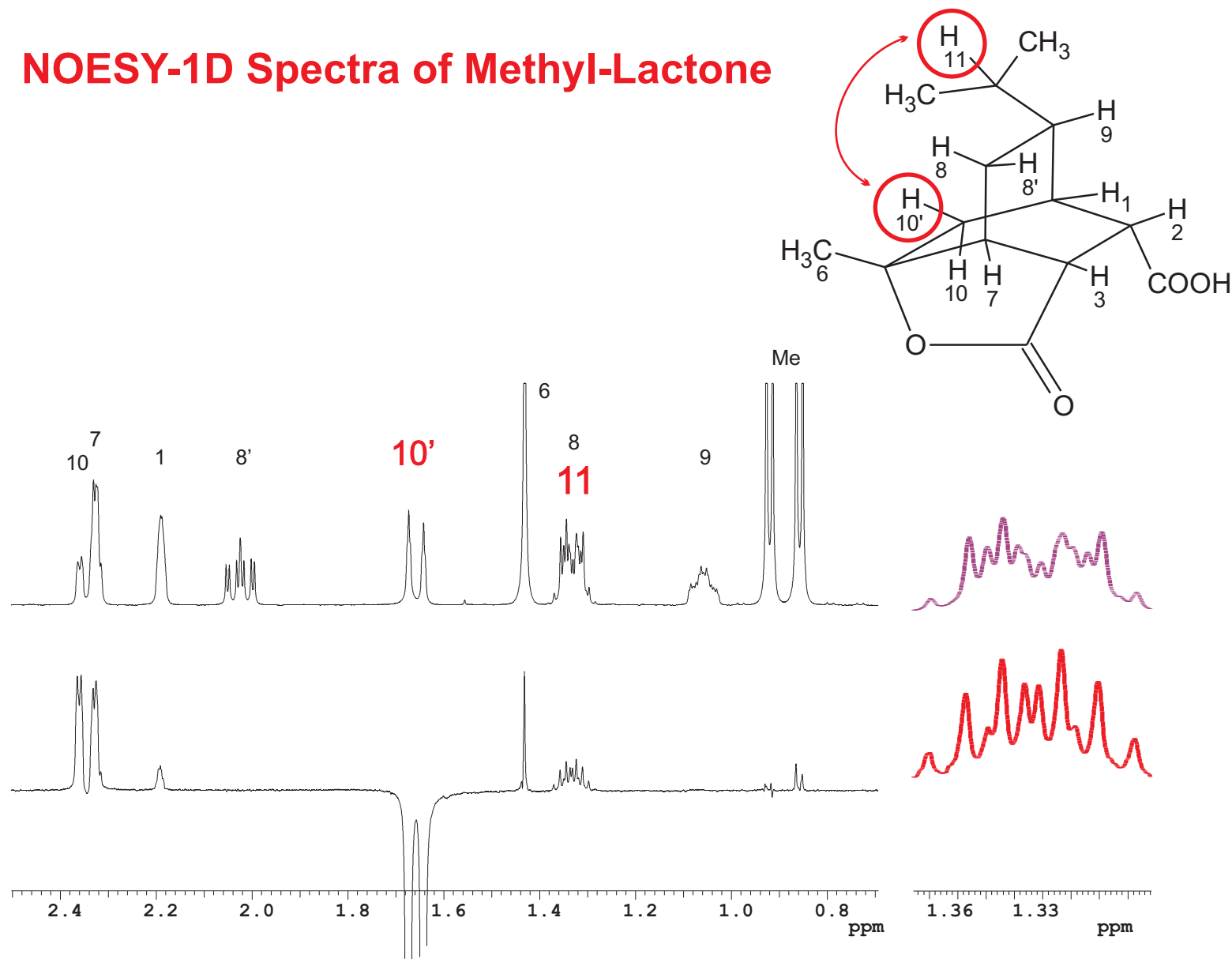
Normal ^1H Spectrum of Methyl-Lactone



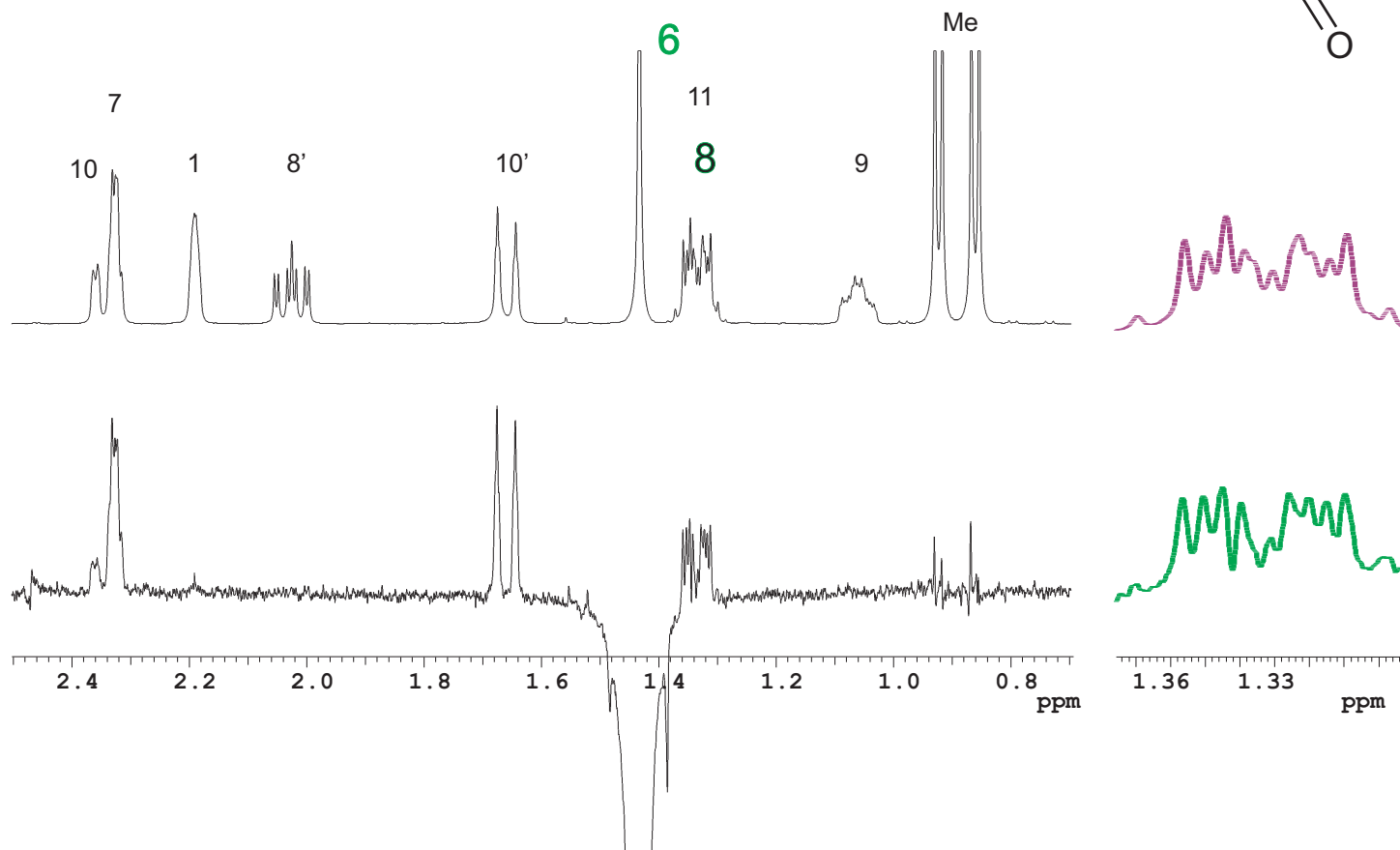
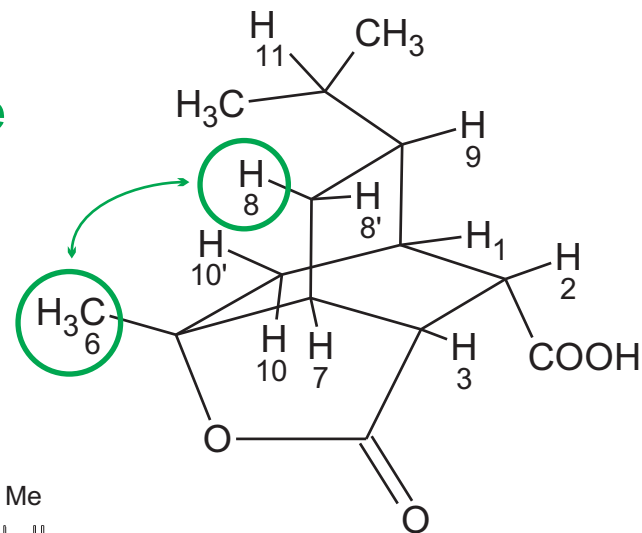
NOESY-1D Spectra of Methyl-Lactone



NOESY-1D Spectra of Methyl-Lactone



NOESY-1D Spectra of Methyl-Lactone



NOESY-1D Spectra of Methyl-Lactone

Unity-500, ambient temp
nt=64

