

# Problem Set 1

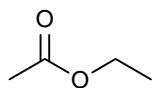
Reich  
Chem 345

## Two Isomers of C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

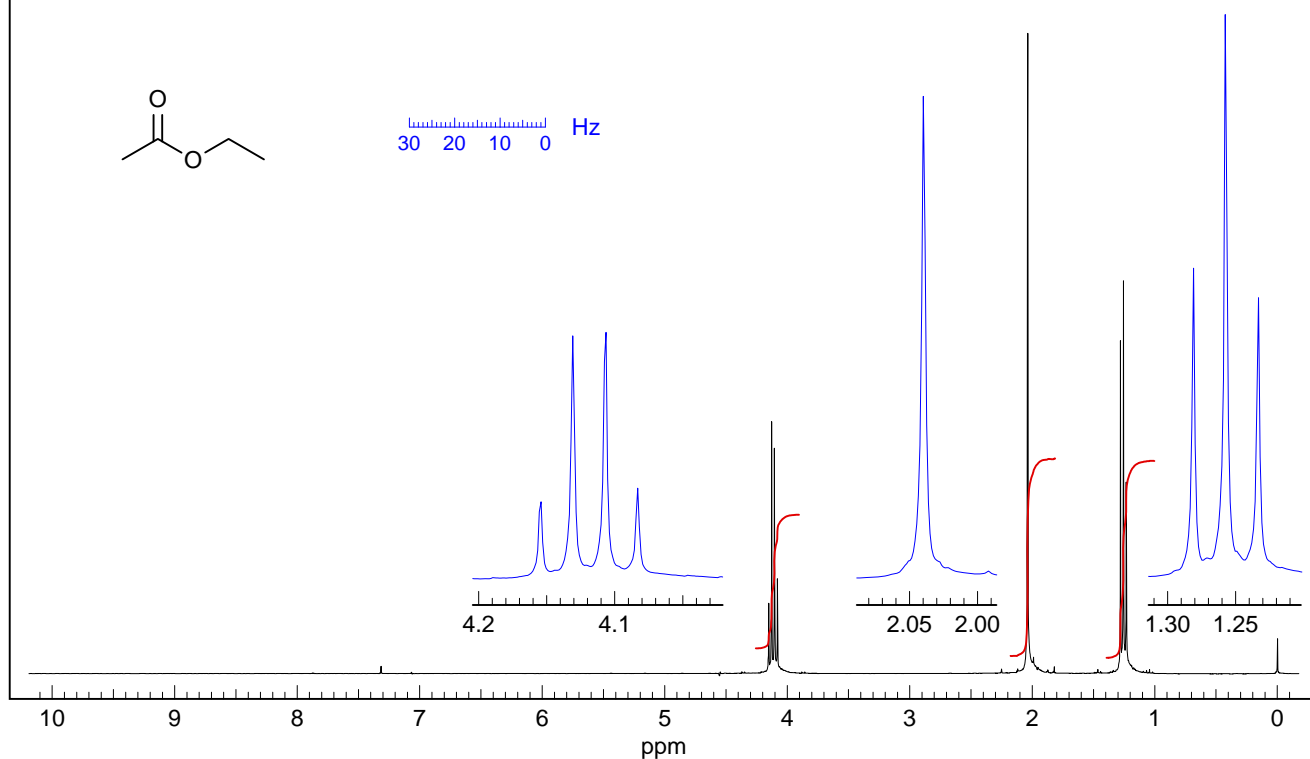
### Problem R-16A: C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

300 MHz <sup>1</sup>H NMR Spectrum in CDCl<sub>3</sub>

Source: Aldrich Spectral Viewer/Reich



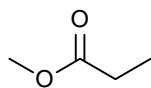
30 20 10 0 Hz



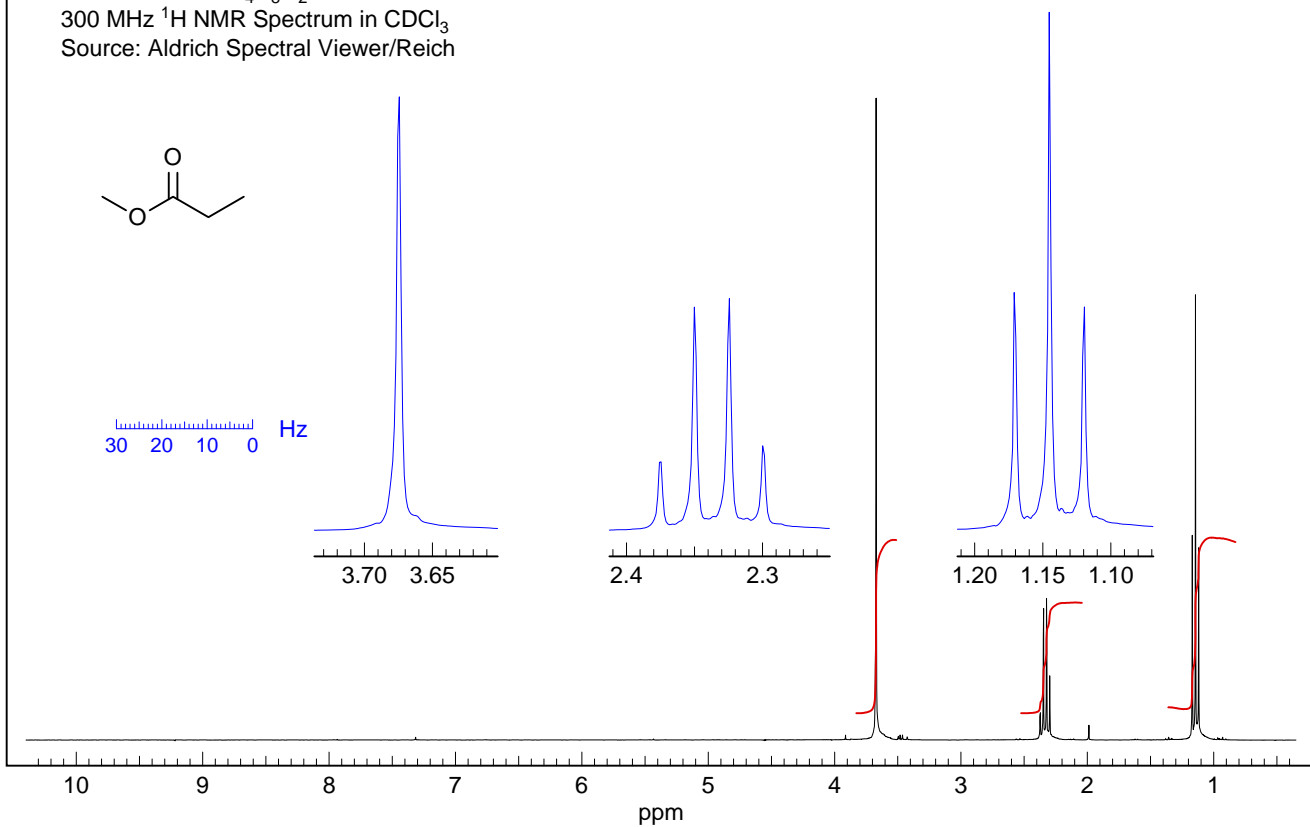
### Problem R-16B: C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

300 MHz <sup>1</sup>H NMR Spectrum in CDCl<sub>3</sub>

Source: Aldrich Spectral Viewer/Reich



30 20 10 0 Hz

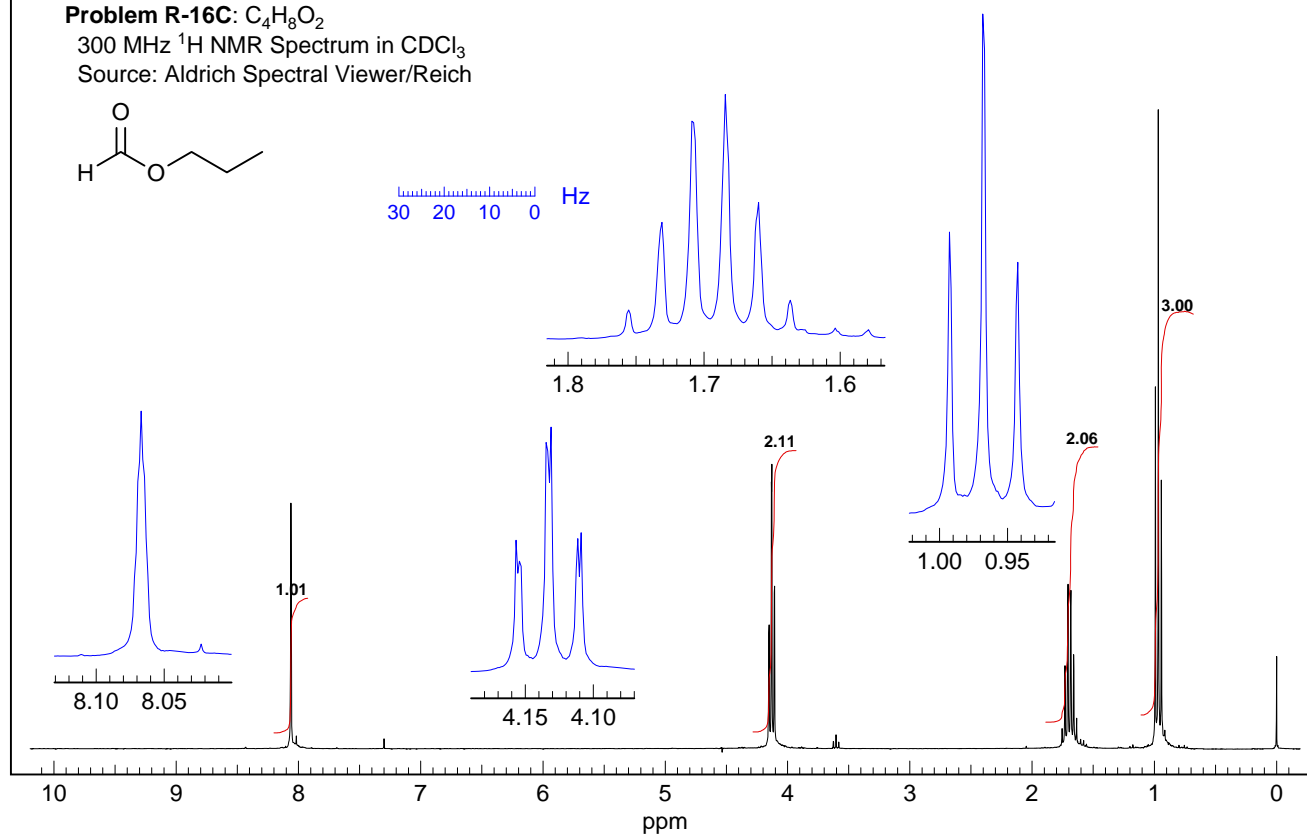
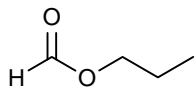


## Two Isomers of C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

### Problem R-16C: C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

300 MHz <sup>1</sup>H NMR Spectrum in CDCl<sub>3</sub>

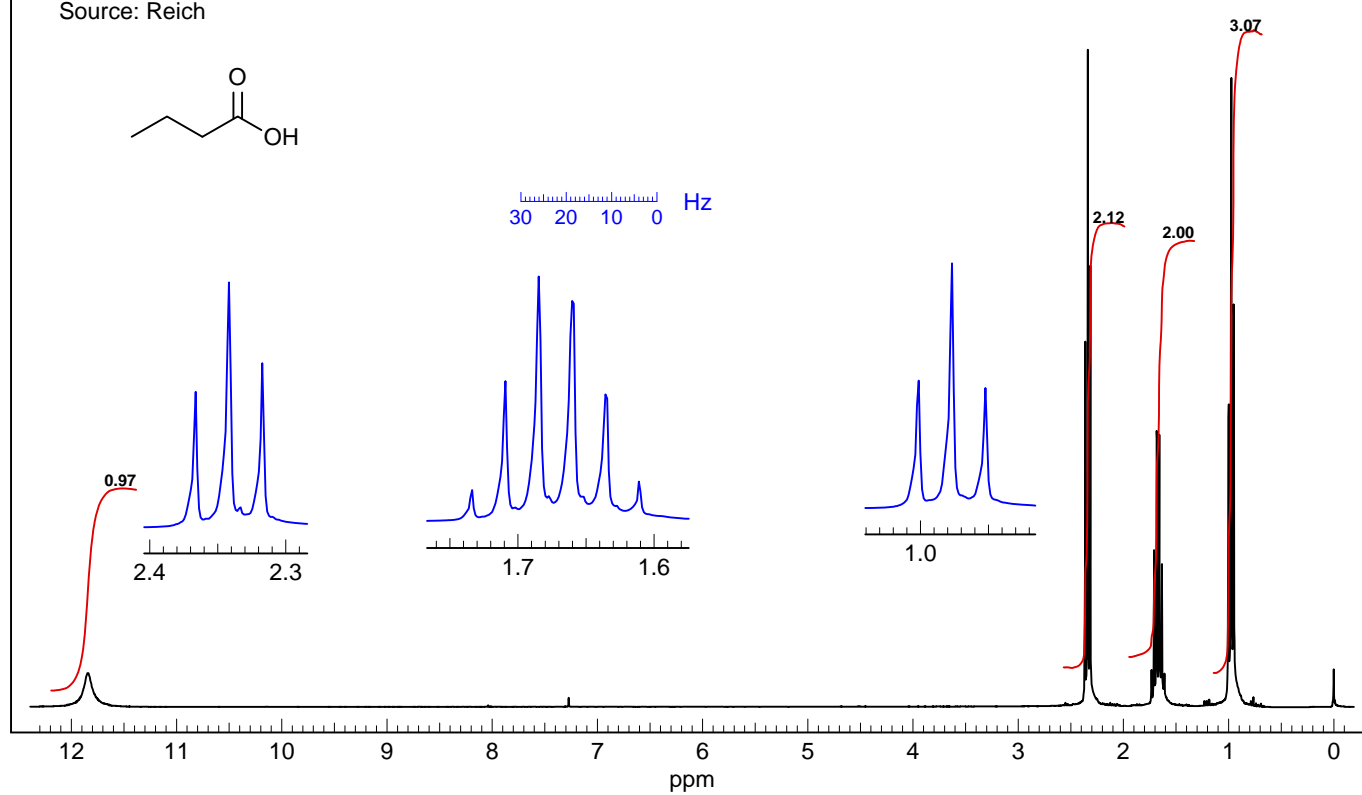
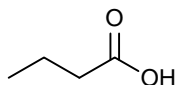
Source: Aldrich Spectral Viewer/Reich



### Problem R-16D: C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

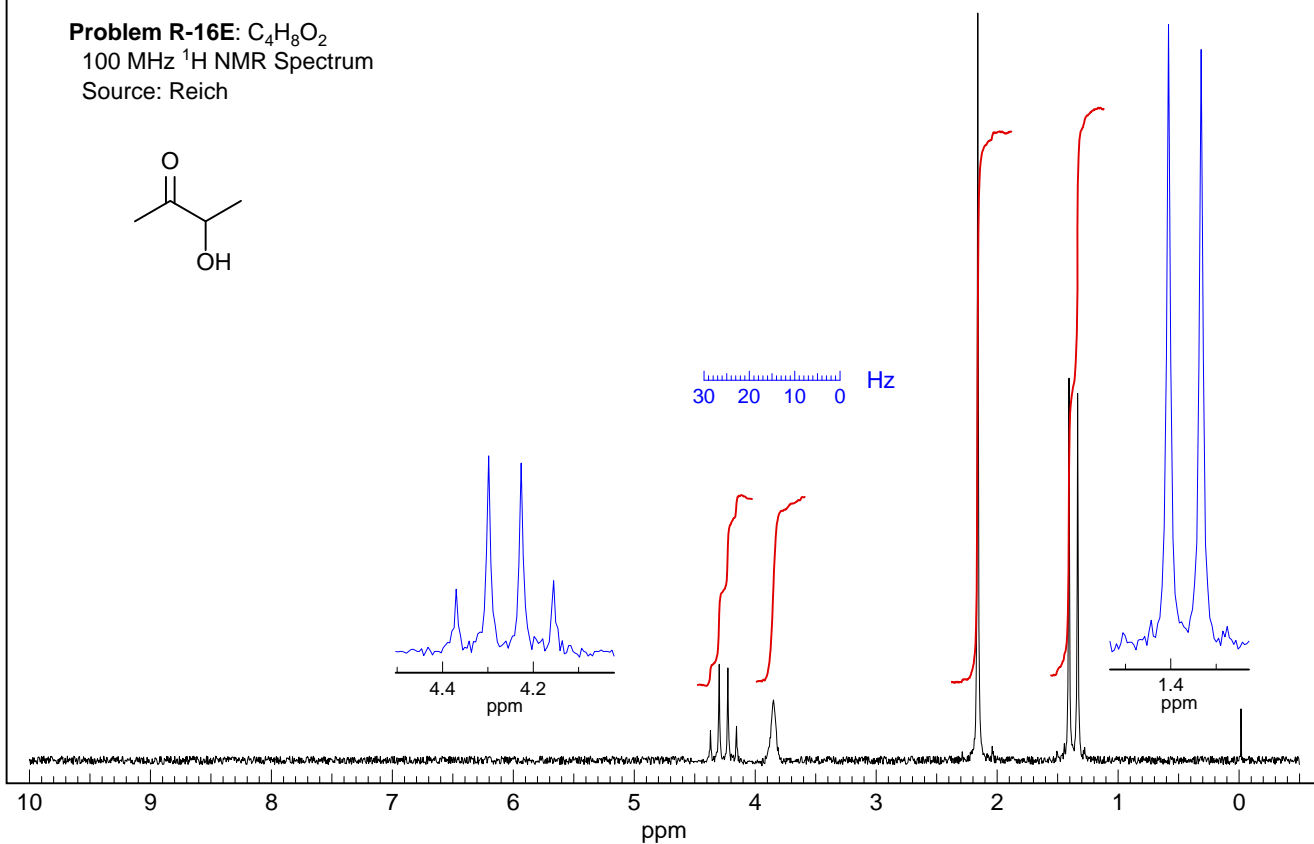
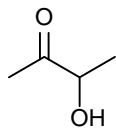
100 MHz <sup>1</sup>H NMR Spectrum

Source: Reich

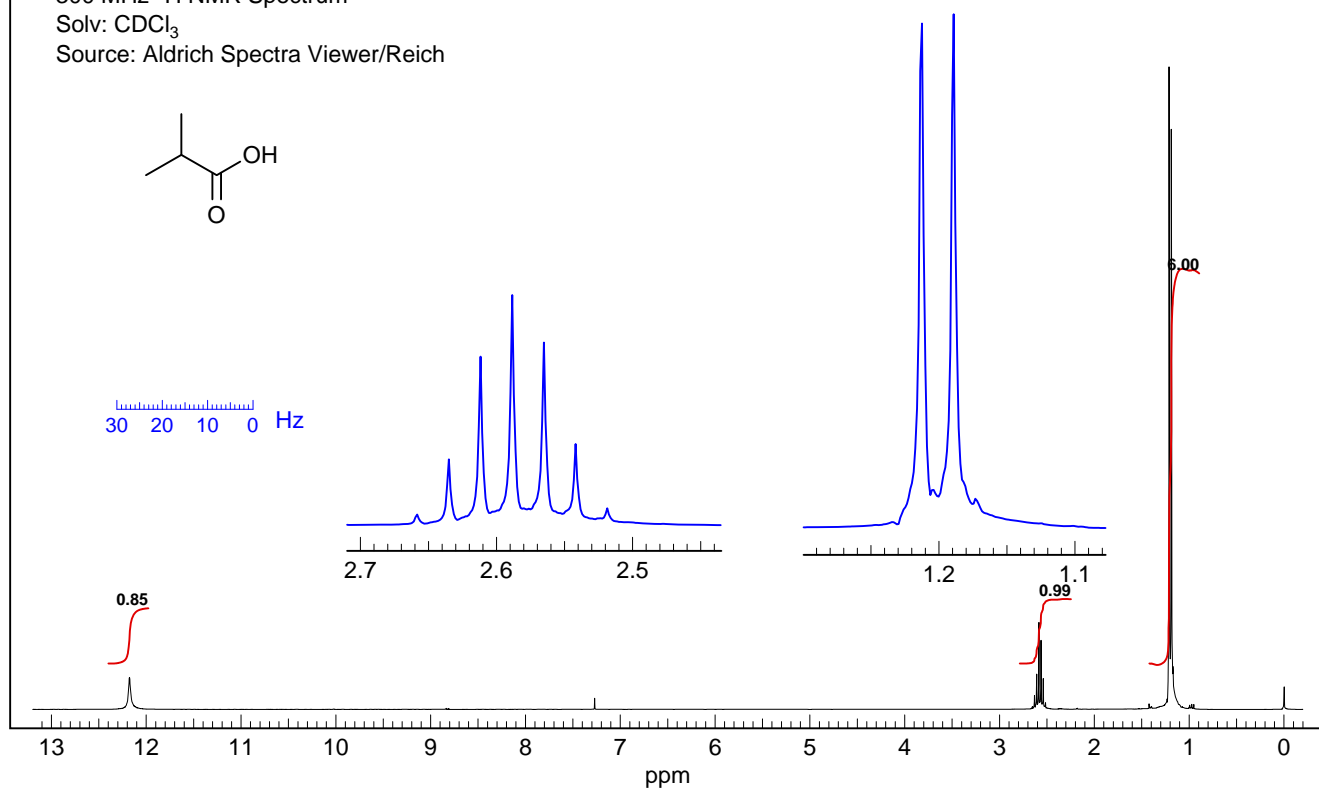
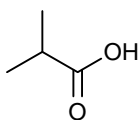


## Two Isomers of C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

**Problem R-16E:** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>  
100 MHz <sup>1</sup>H NMR Spectrum  
Source: Reich



**Problem R-16F:** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>  
300 MHz <sup>1</sup>H NMR Spectrum  
Solv: CDCl<sub>3</sub>  
Source: Aldrich Spectra Viewer/Reich

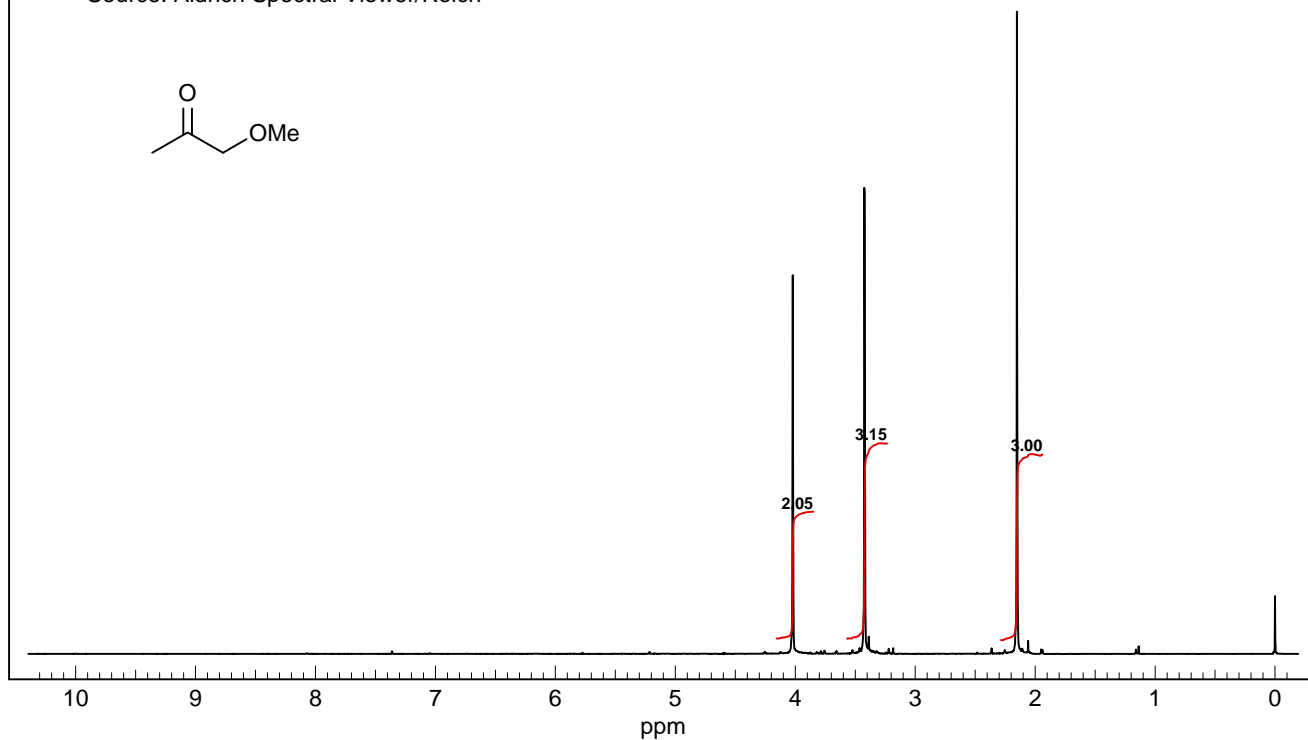
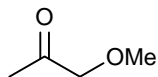


## Two Isomers of C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

**Problem R-16G:** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

300 MHz <sup>1</sup>H NMR Spectrum in CDCl<sub>3</sub>

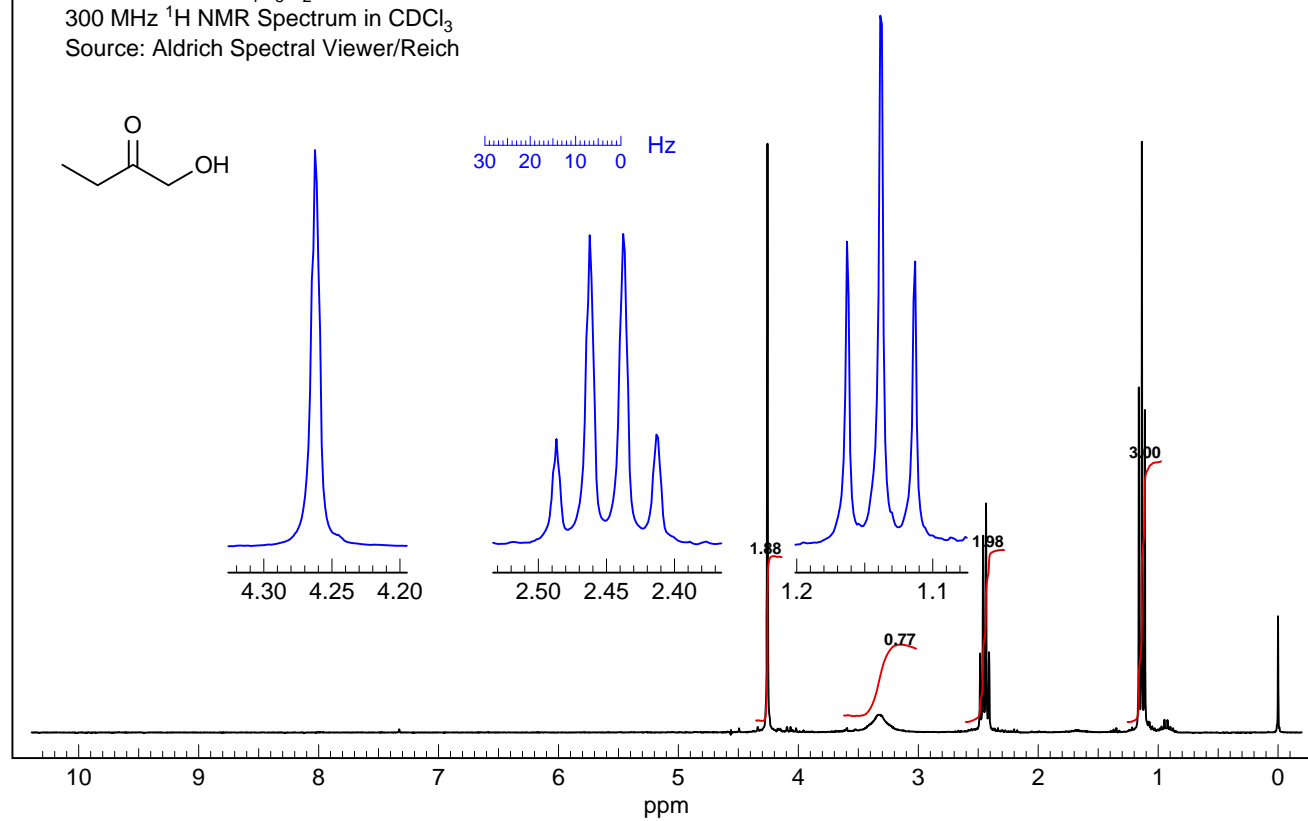
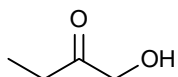
Source: Aldrich Spectral Viewer/Reich



**Problem R-16H:** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

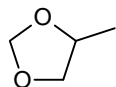
300 MHz <sup>1</sup>H NMR Spectrum in CDCl<sub>3</sub>

Source: Aldrich Spectral Viewer/Reich

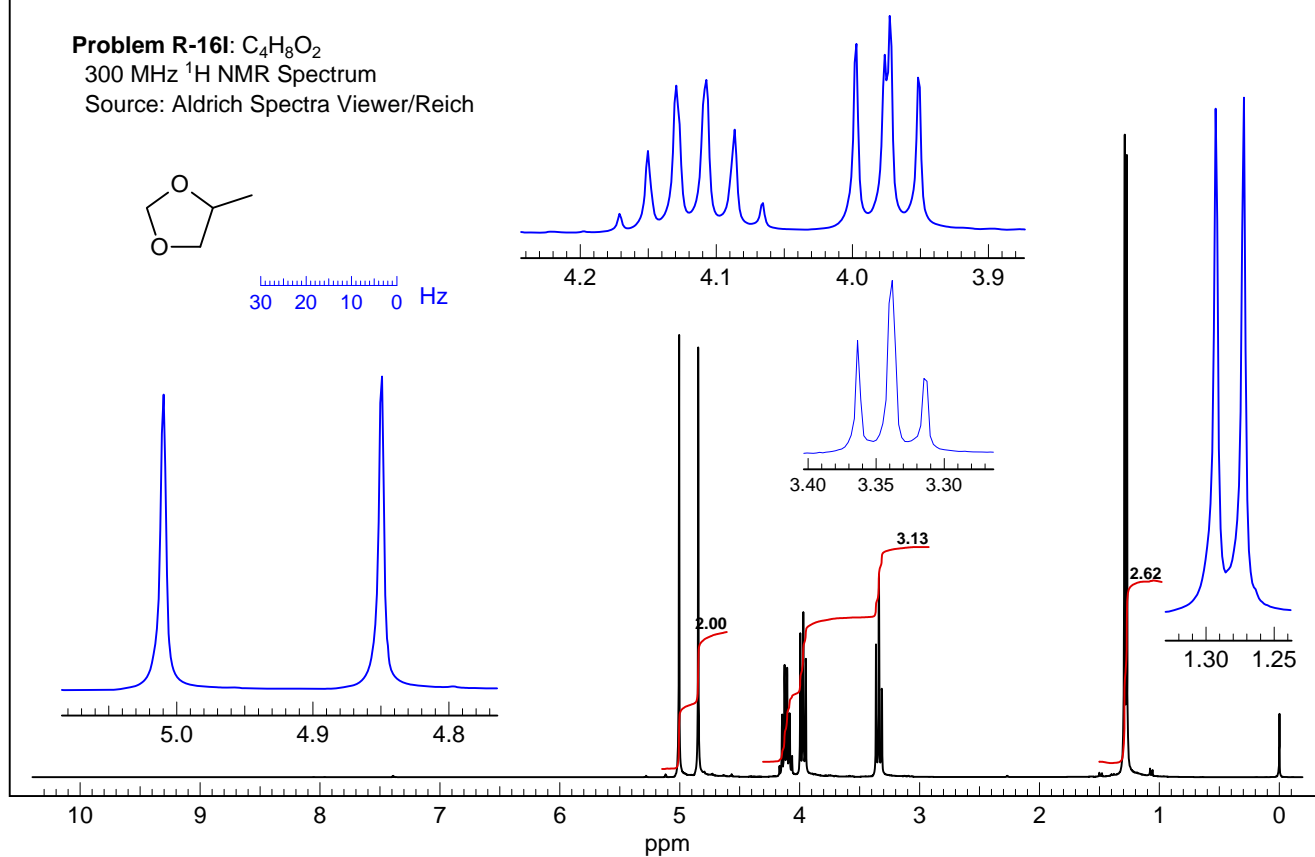


## Two Isomers of C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

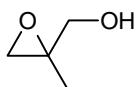
**Problem R-16I:** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>  
 300 MHz <sup>1</sup>H NMR Spectrum  
 Source: Aldrich Spectra Viewer/Reich



30 20 10 0 Hz



**Problem R-16J:** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>  
 300 MHz <sup>1</sup>H NMR Spectrum  
 Source: Aldrich Spectra Viewer/Reich



30 20 10 0 Hz

