



سازمان جهاد دانشگاهی تهران



سازمان جهاد دانشگاهی تهران

معاونت پژوهش و فناوری

مرکز تحقیقات و فناوری نفت، گاز و فرایندهای شیمیایی (کیمیا)

گروه پژوهشی شیمی کاربردی

طرح فناورانه

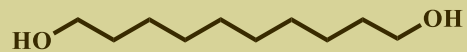
بومی سازی و تکمیل دانش فنی تولید فرومون مبارزه با آفت کرم خراط درخت گردو

سنتز و آنالیز اجزای سه گانه فرومون کرم خراط

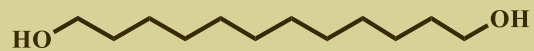


سنتز فرومون جنسی کرم خراط

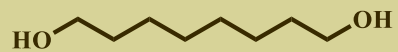
مواد اولیه: دی-اول ها



1,10-Decanediol



1,12-Dodecanediol



1,8-Octandiol

۶ مرحله

حدواسط‌های کلیدی در سنتز فرومون کرم خراط: آلدهید



Z11-16:Ald



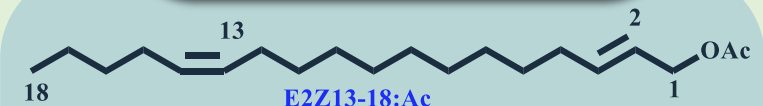
Z13-18:Ald



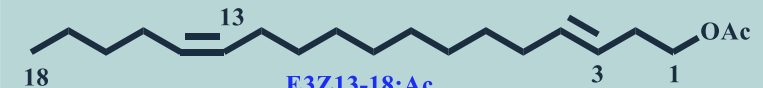
Z9-16:Ald

۳ مرحله

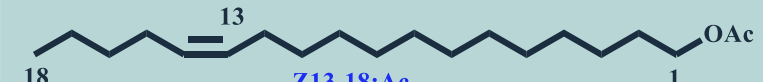
اجزای سه‌گانه فرومون جنسی کرم خراط



E2Z13-18:Ac
E2,Z13-octadecadienyl acetate (Major Component)

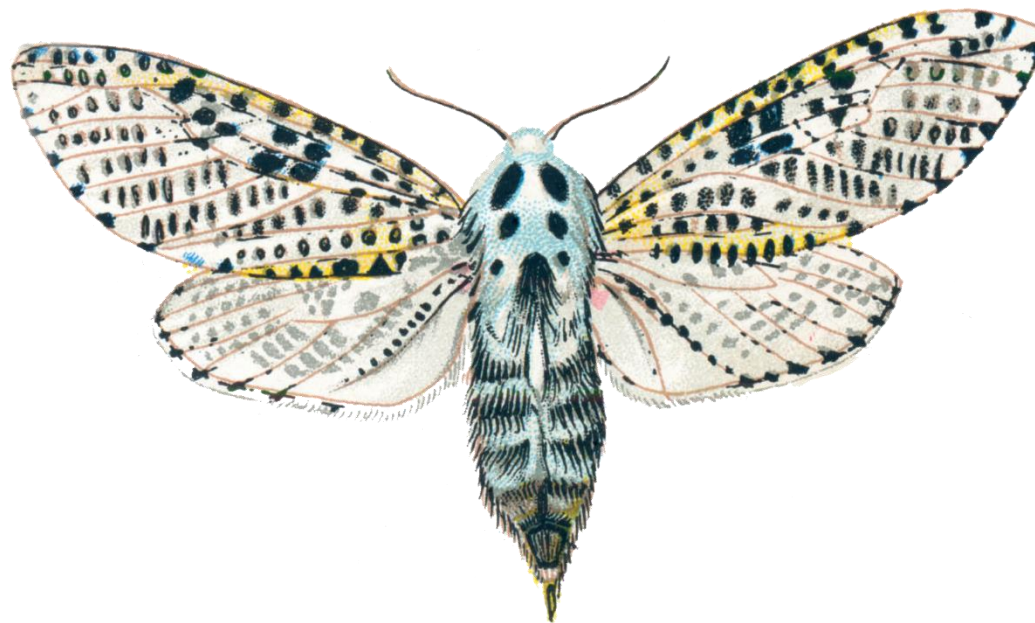


E3Z13-18:Ac
E3,Z13-octadecadienyl acetate

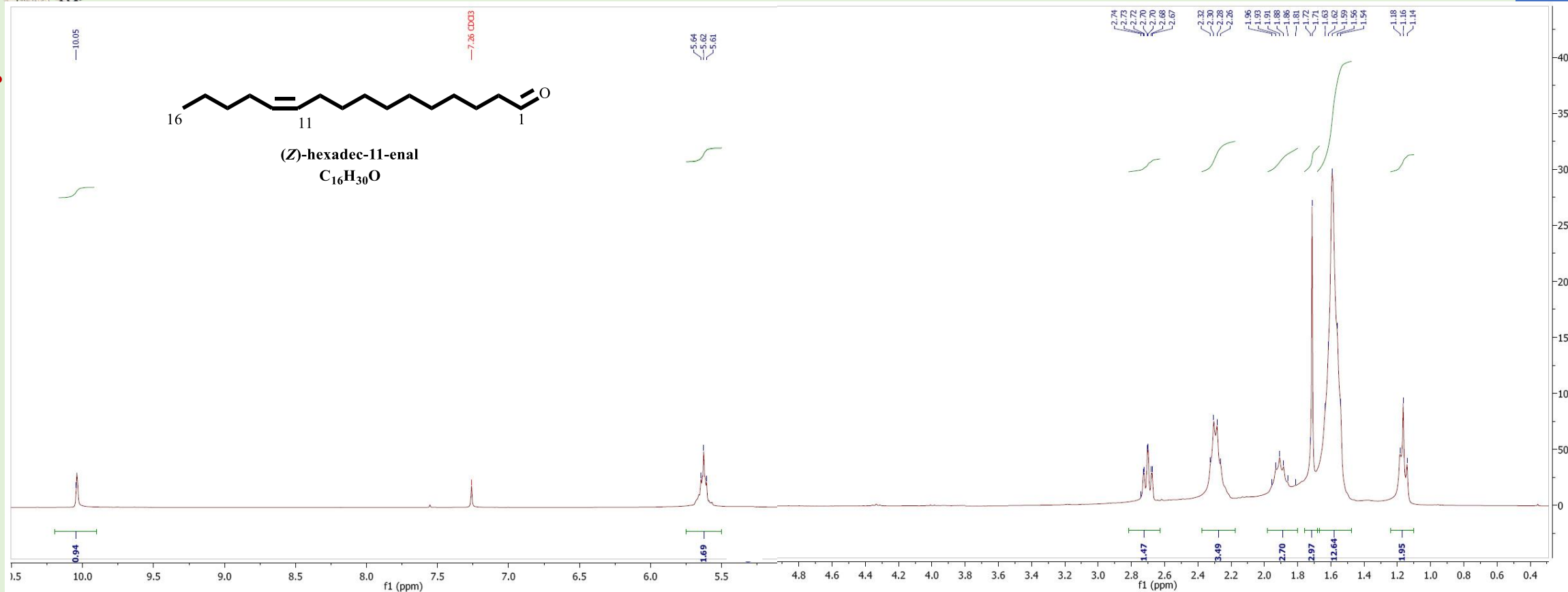


Z13-18:Ac
(Z)-13-octadecenyl acetate

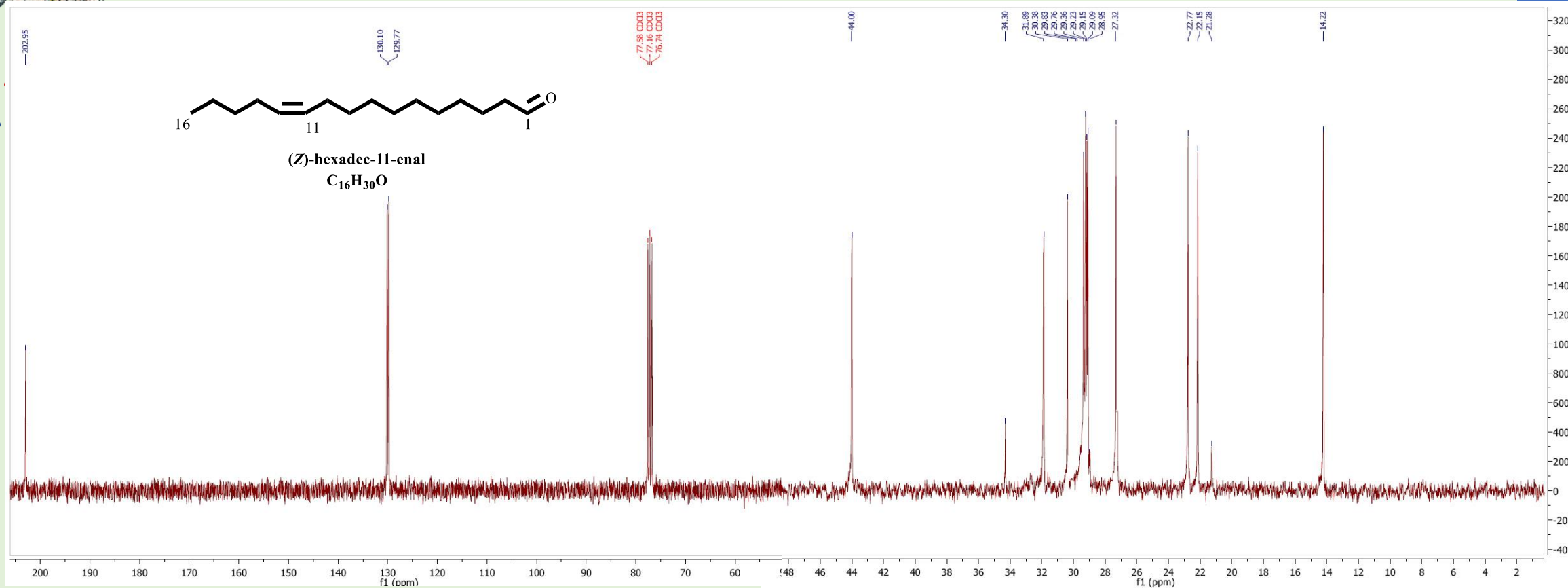
آنالیز نمونه‌ها



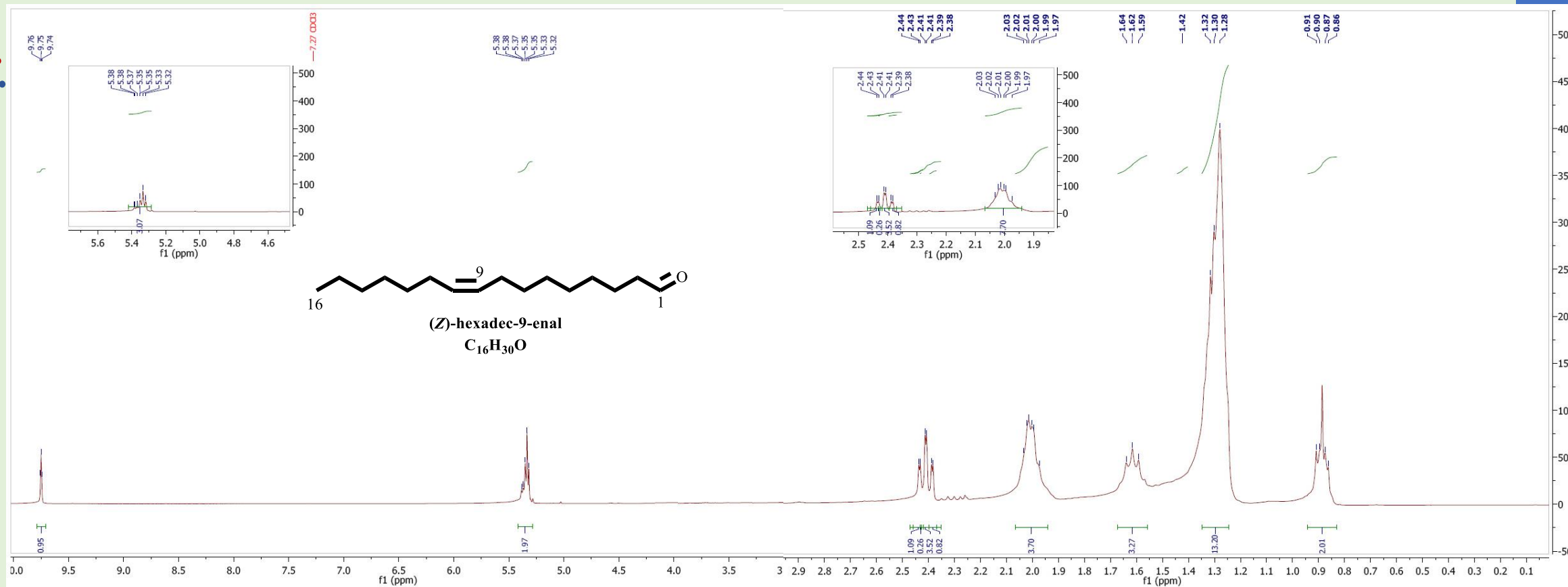
طیف هیدروژن ترکیب Z11-16:Ald



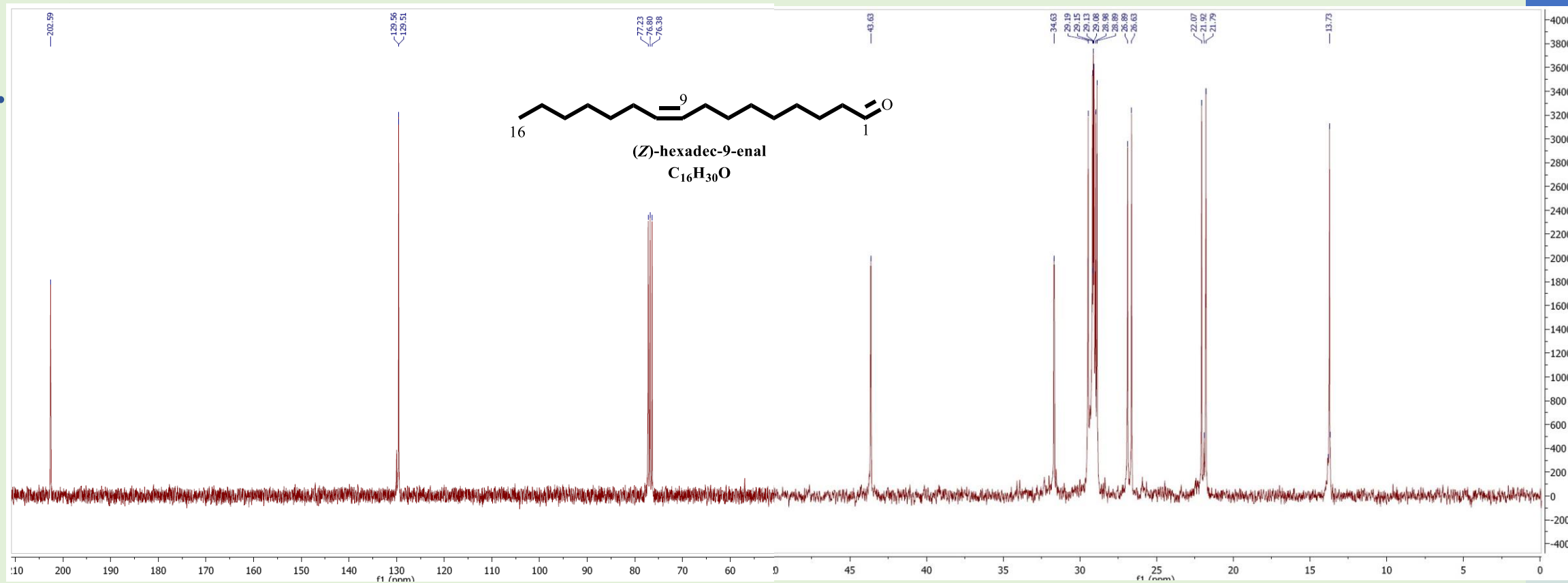
طیف کربن ترکیب Z11-16:Ald



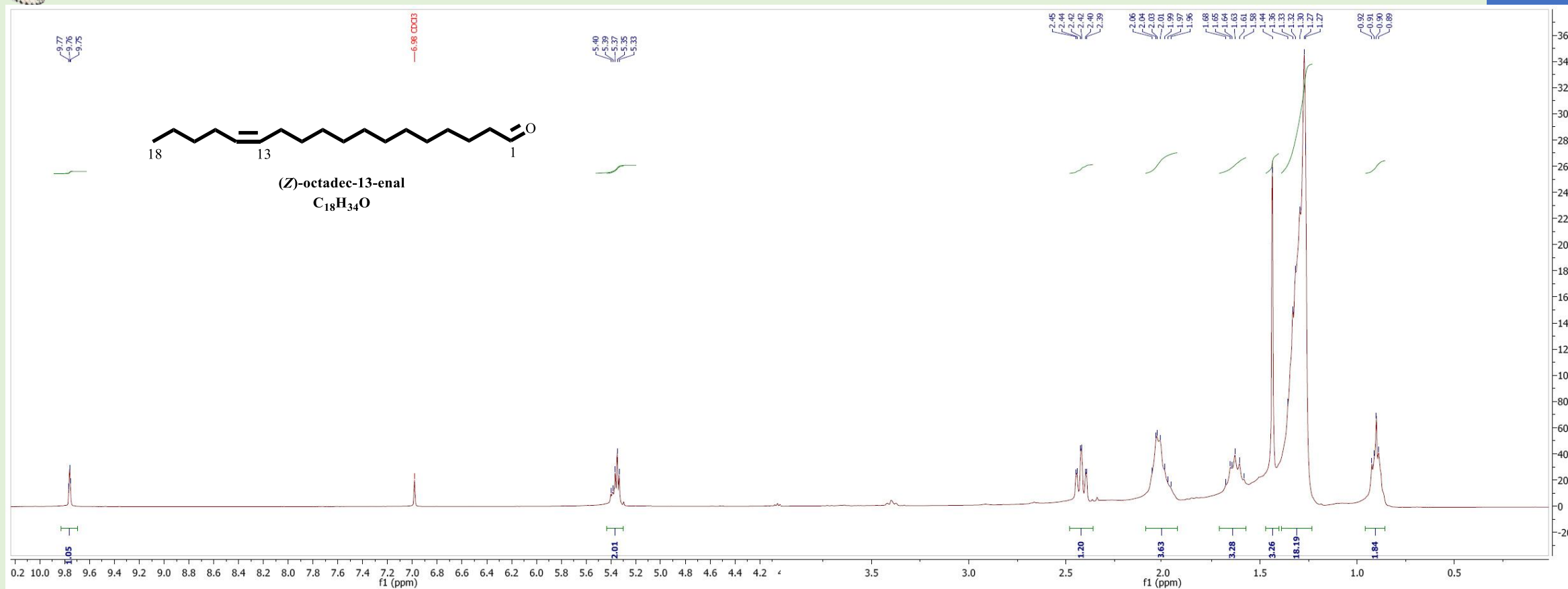
طیف هیدروژن ترکیب Z9-16:Ald



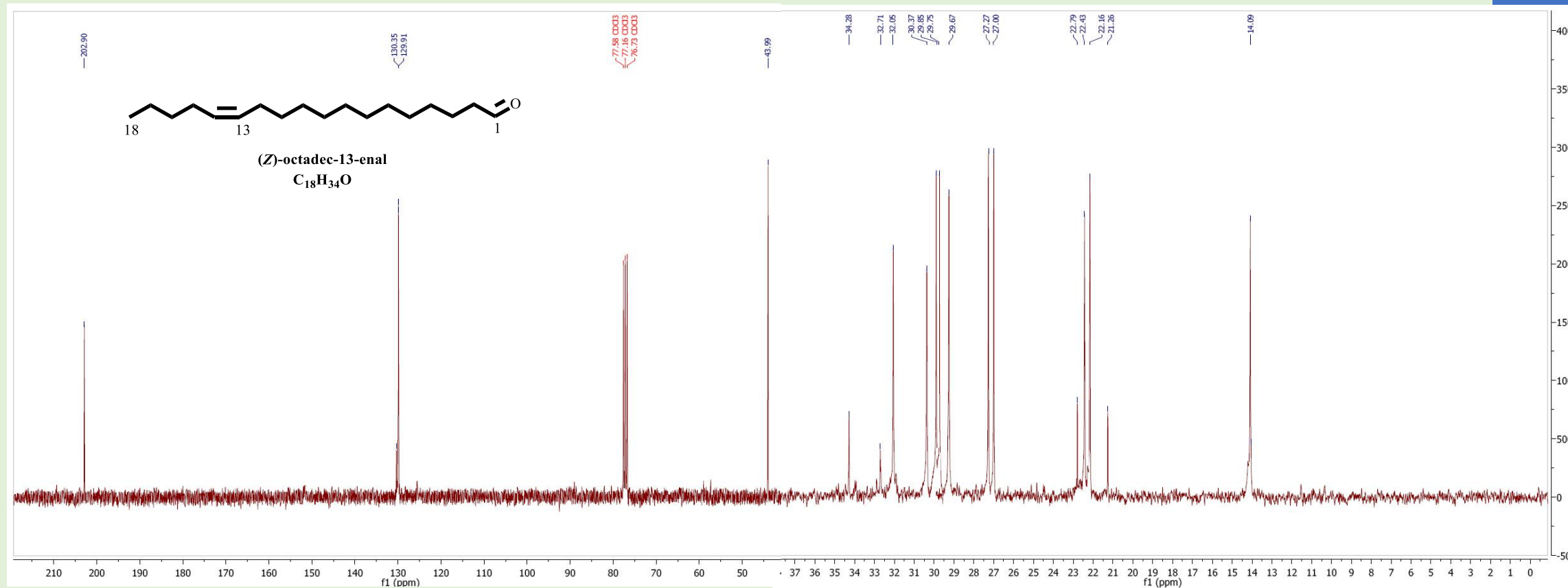
طیف کربن ترکیب Z9-16:Ald



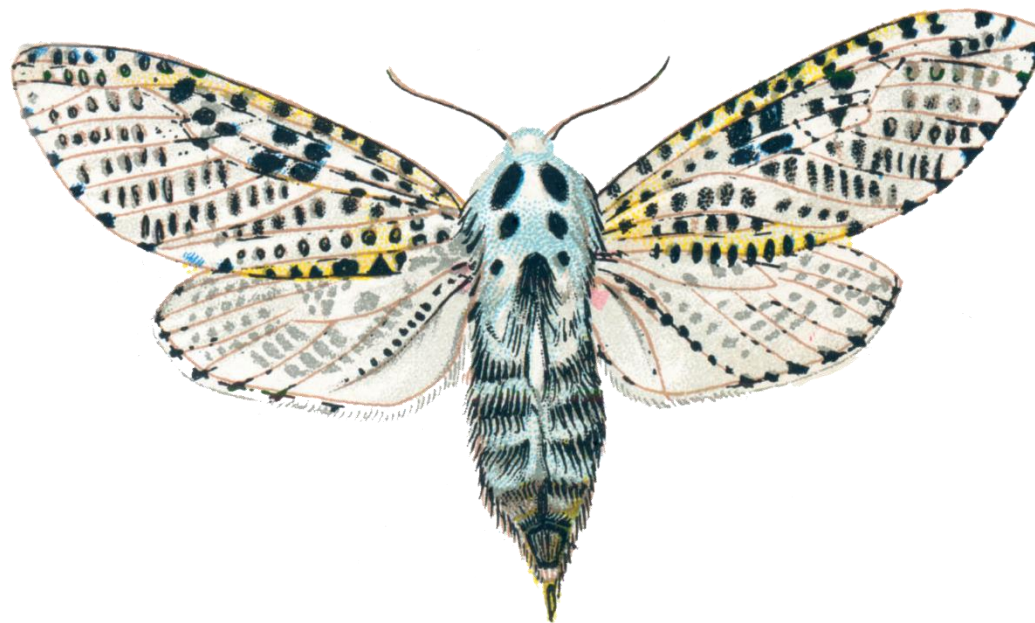
طیف هیدروژن ترکیب Z13-18:Ald

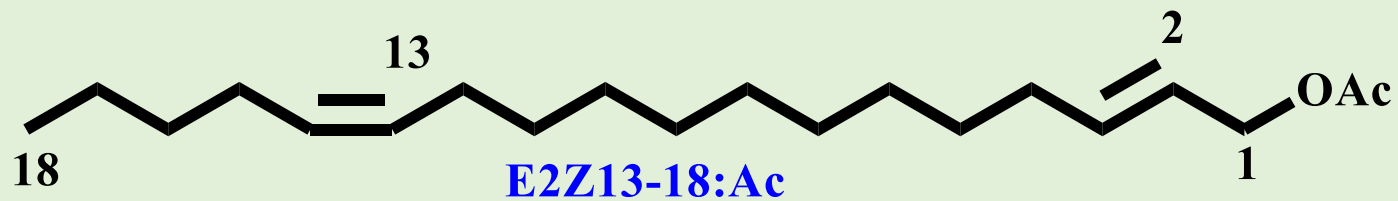


طیف کربن ترکیب Z13-18:Ald

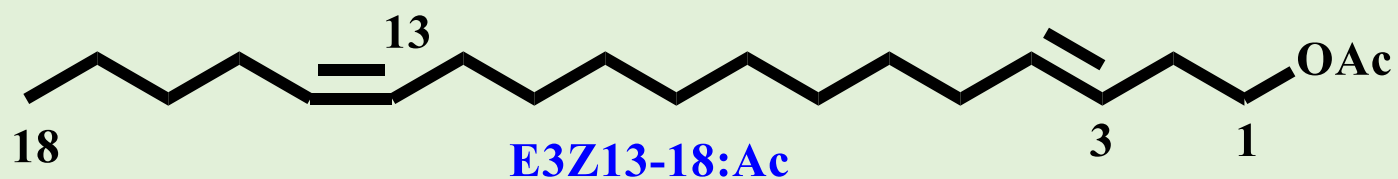


آنالیز نمونه‌ها اجزای فرومون کرم خراط

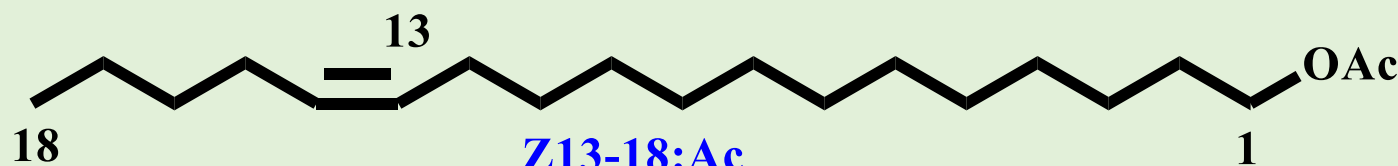




E2,Z13-octadecadienyl acetate (Major Component)



E3,Z13-octadecadienyl acetate



(Z)-13-octadecenyl acetate

جزء ١

1

E2Z13-18:Ac

E2,Z13-octadecadienyl acetate

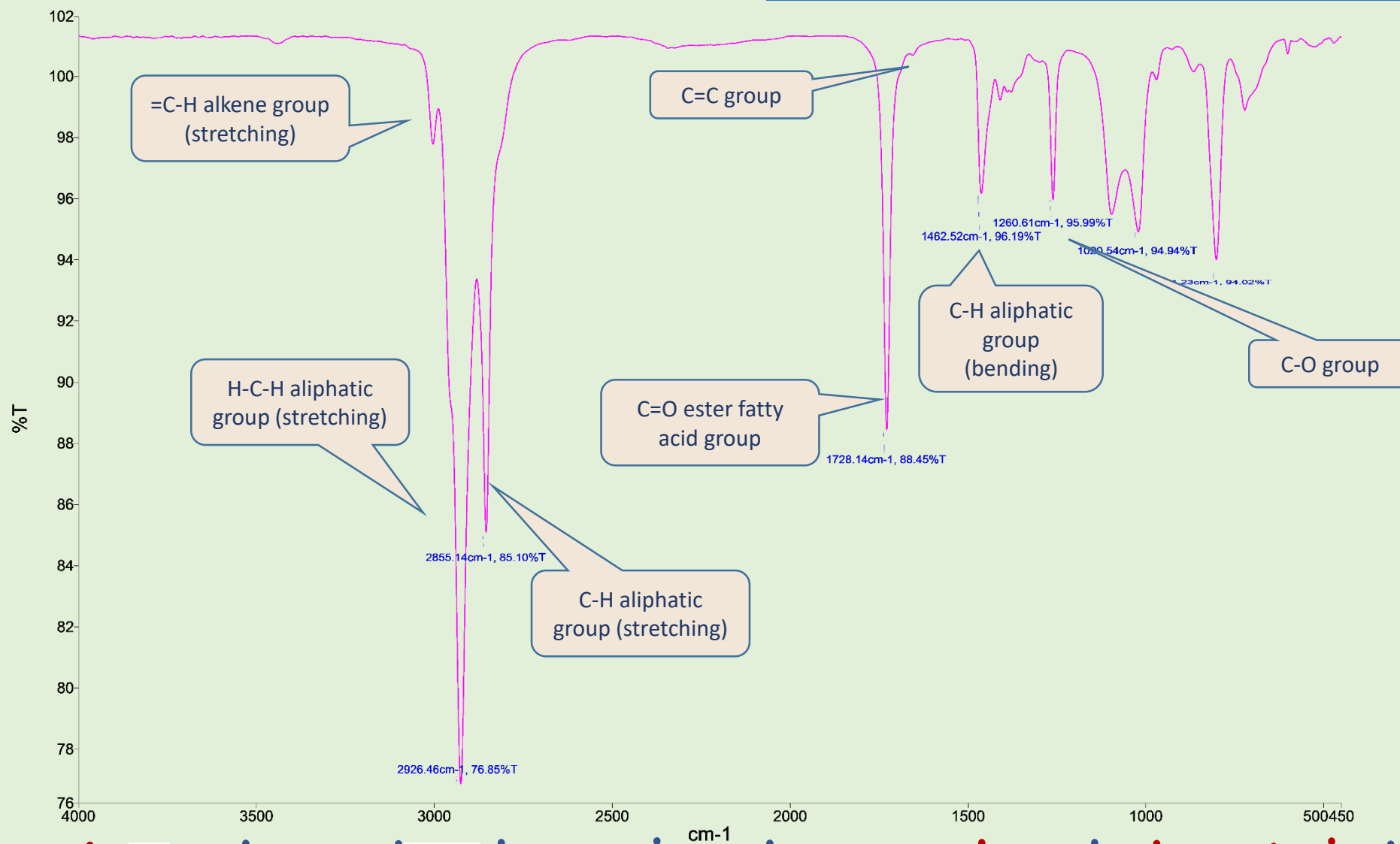
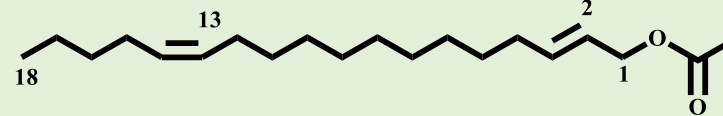




1

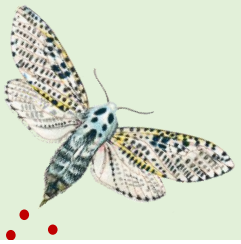
E2Z13-18:Ac

E2,Z13-octadecadienyl acetate



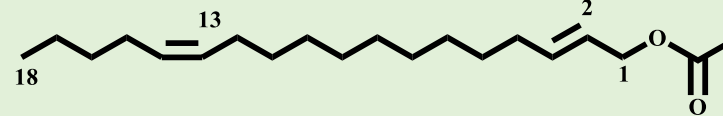
Name: 7W-nHexane_1_1
Description: Sample 265 By Administrator Date Sunday, December 31 2023



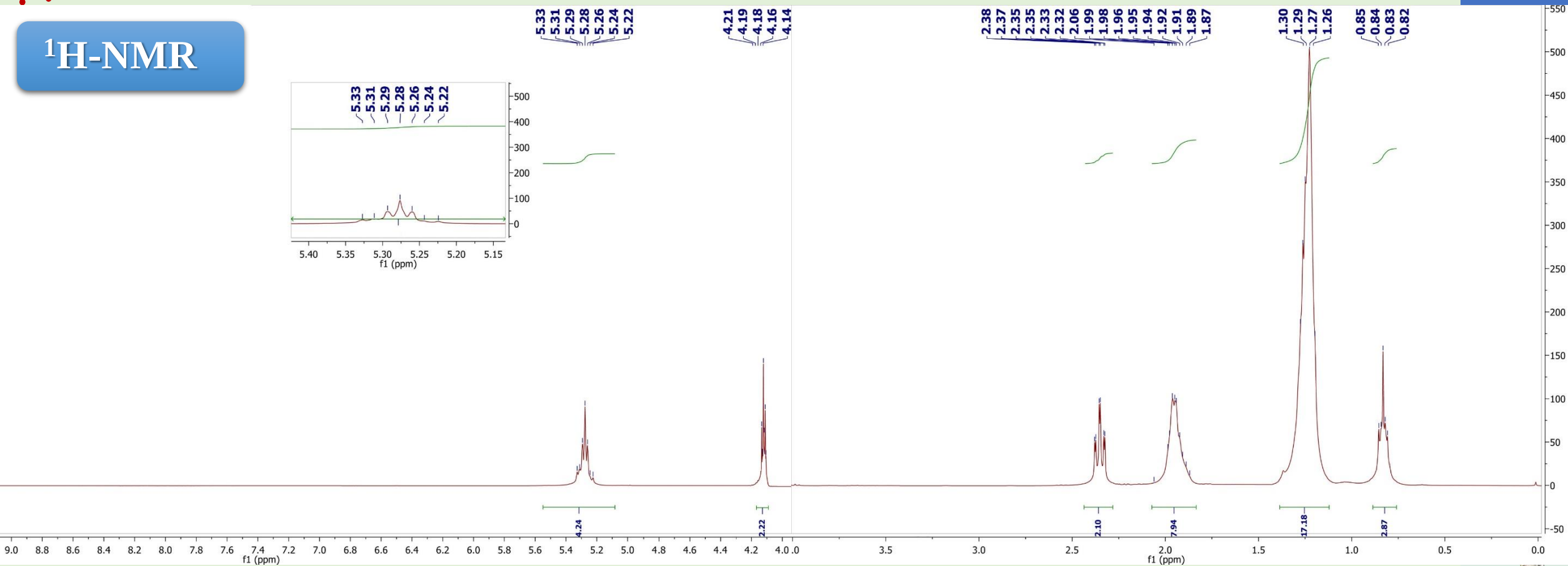


1

E2Z13-18:Ac E2,Z13-octadecadienyl acetate



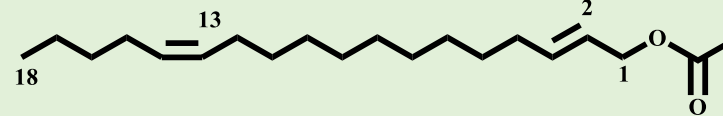
¹H-NMR



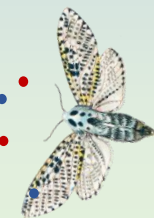
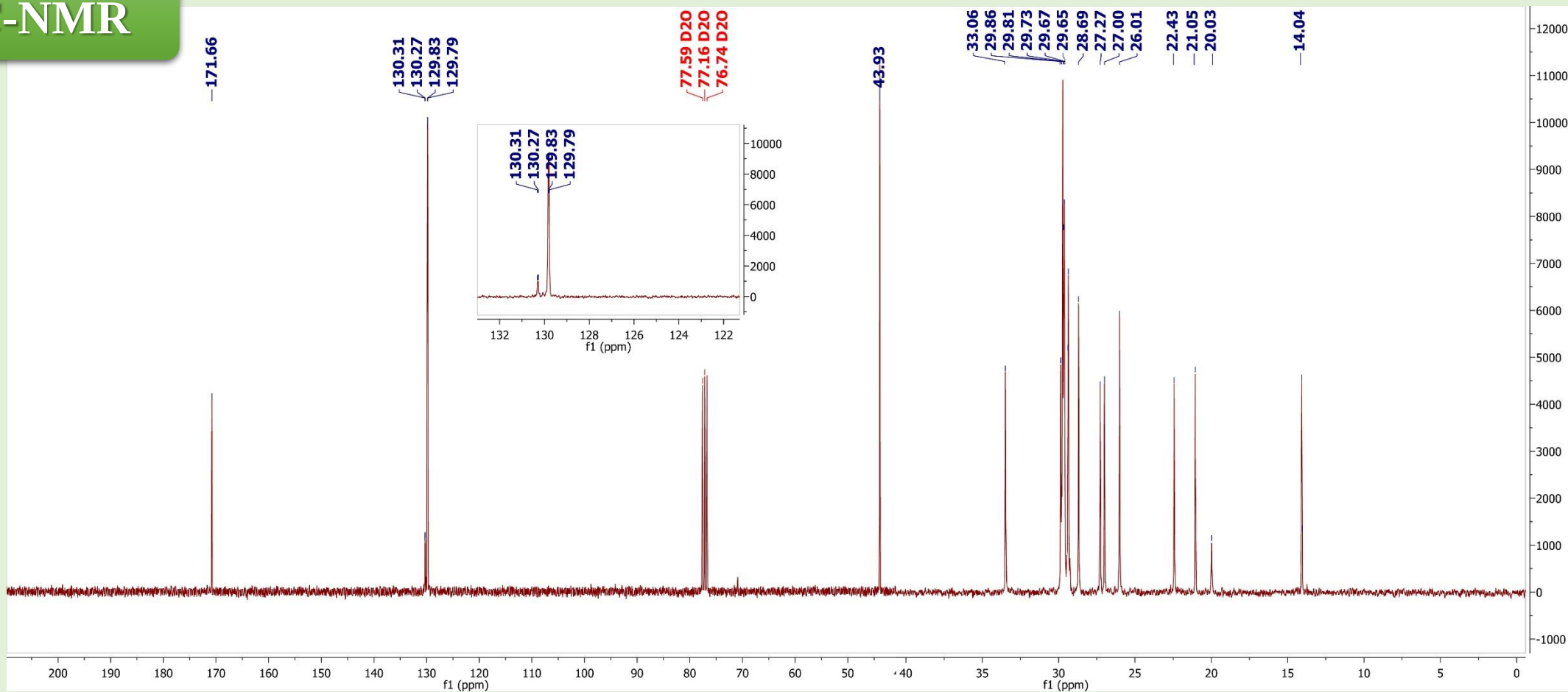


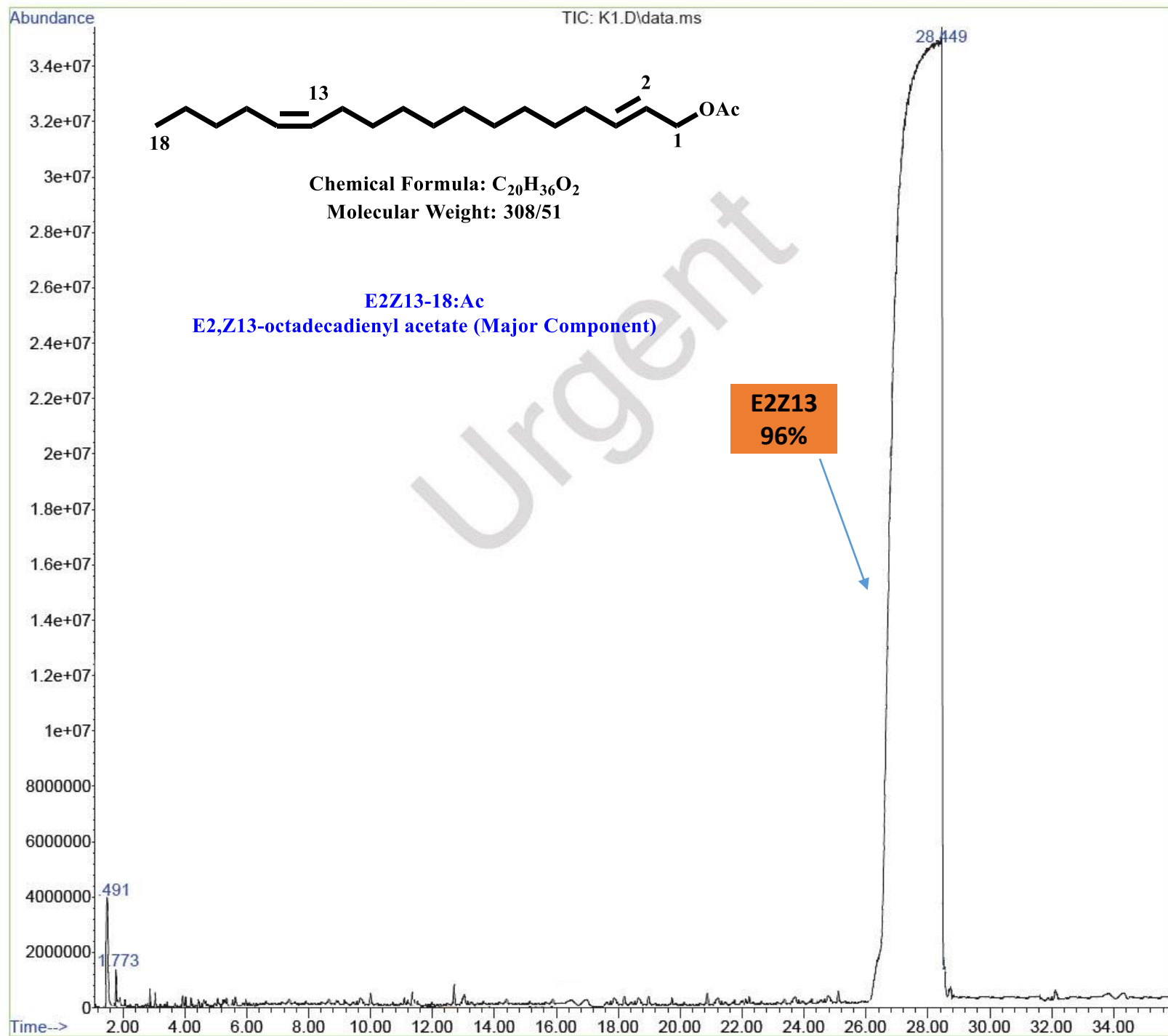
1

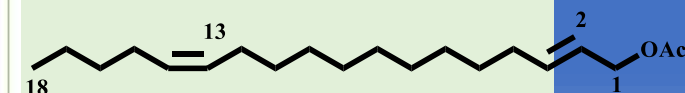
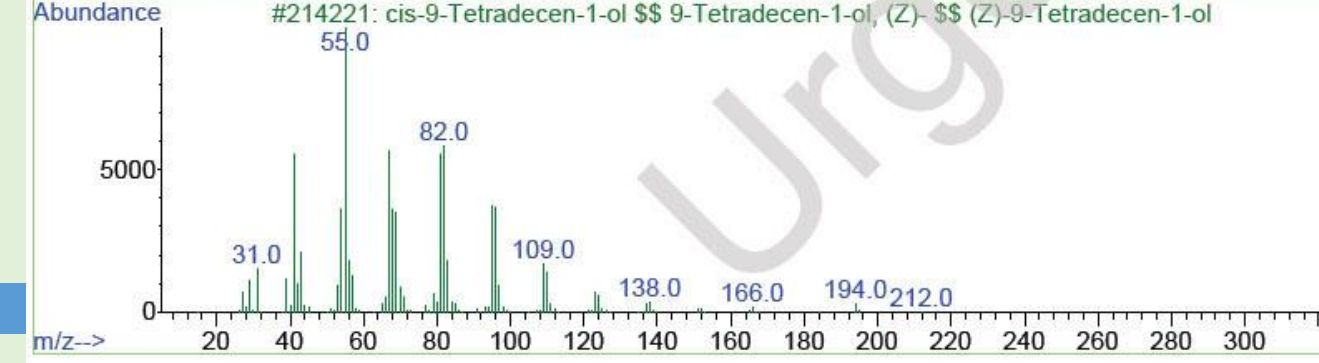
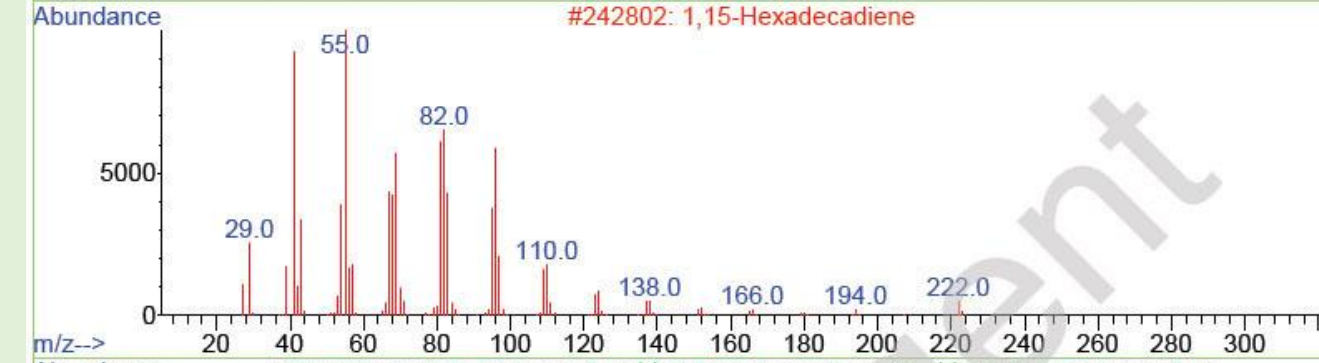
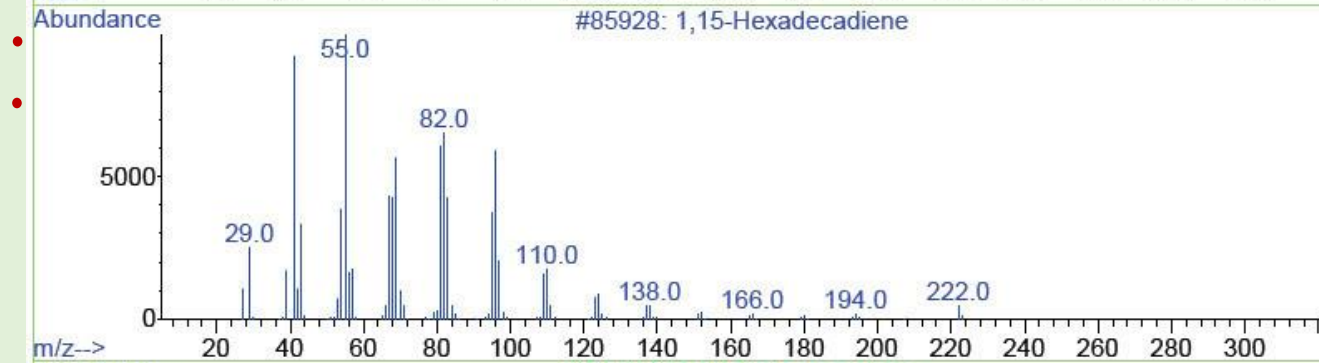
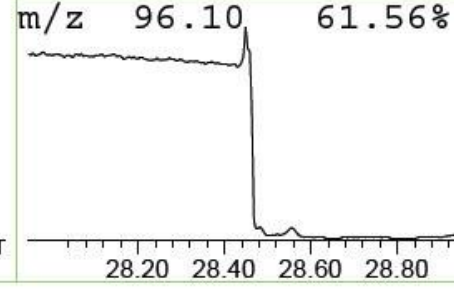
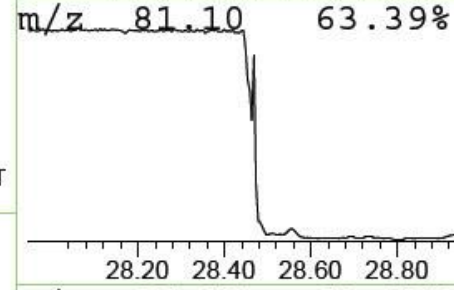
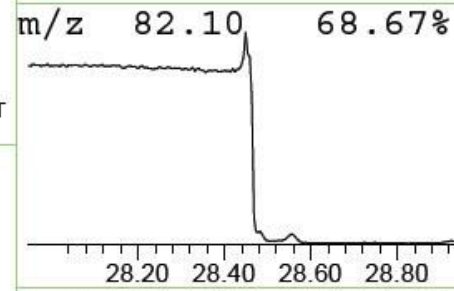
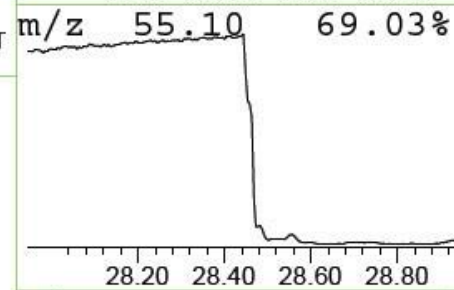
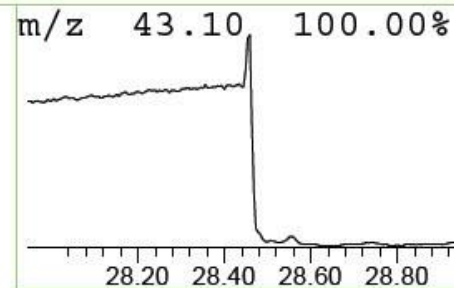
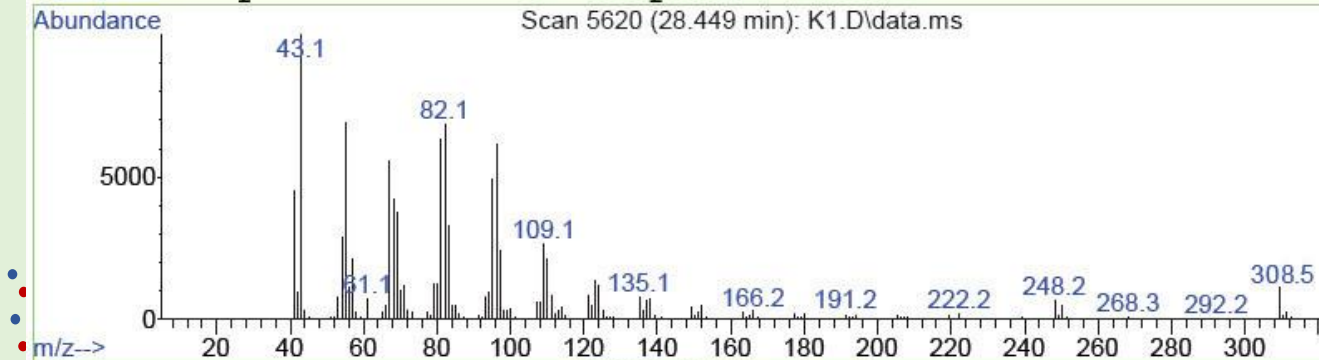
E2Z13-18:Ac E2,Z13-octadecadienyl acetate



¹³C-NMR







Chemical Formula: $C_{20}H_{36}O_2$

Molecular Weight: 308/51

E2Z13-18:Ac

E2,Z13-octadecadienyl acetate (Major Component)

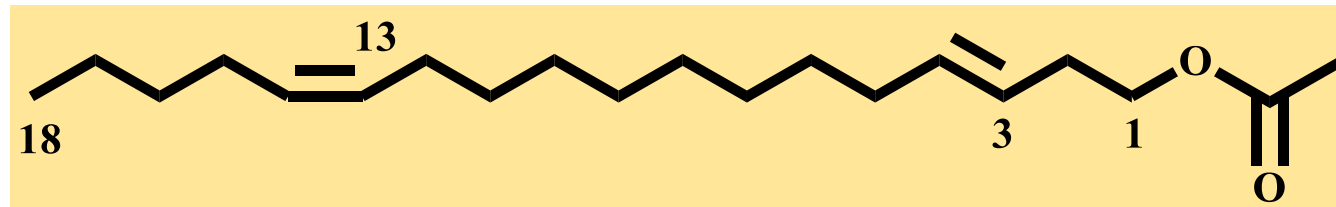


جزء ٢

2

E3Z13-18:Ac

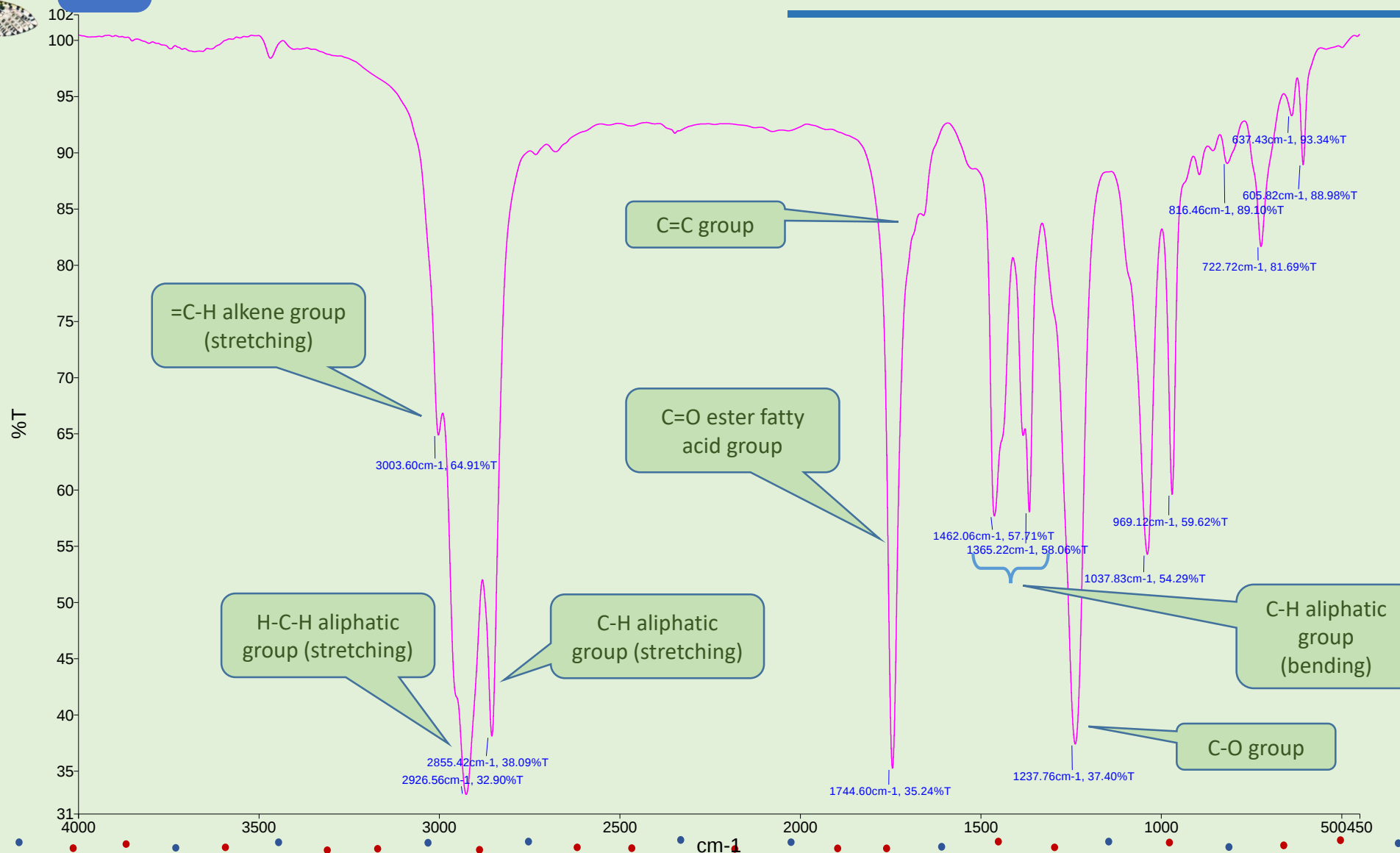
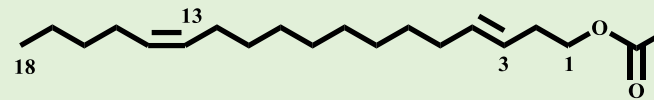
E3,Z13-octadecadienyl acetate





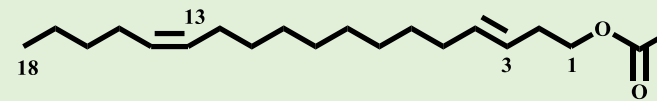
2

E3Z13-18:Ac E3,Z13-octadecadienyl acetate

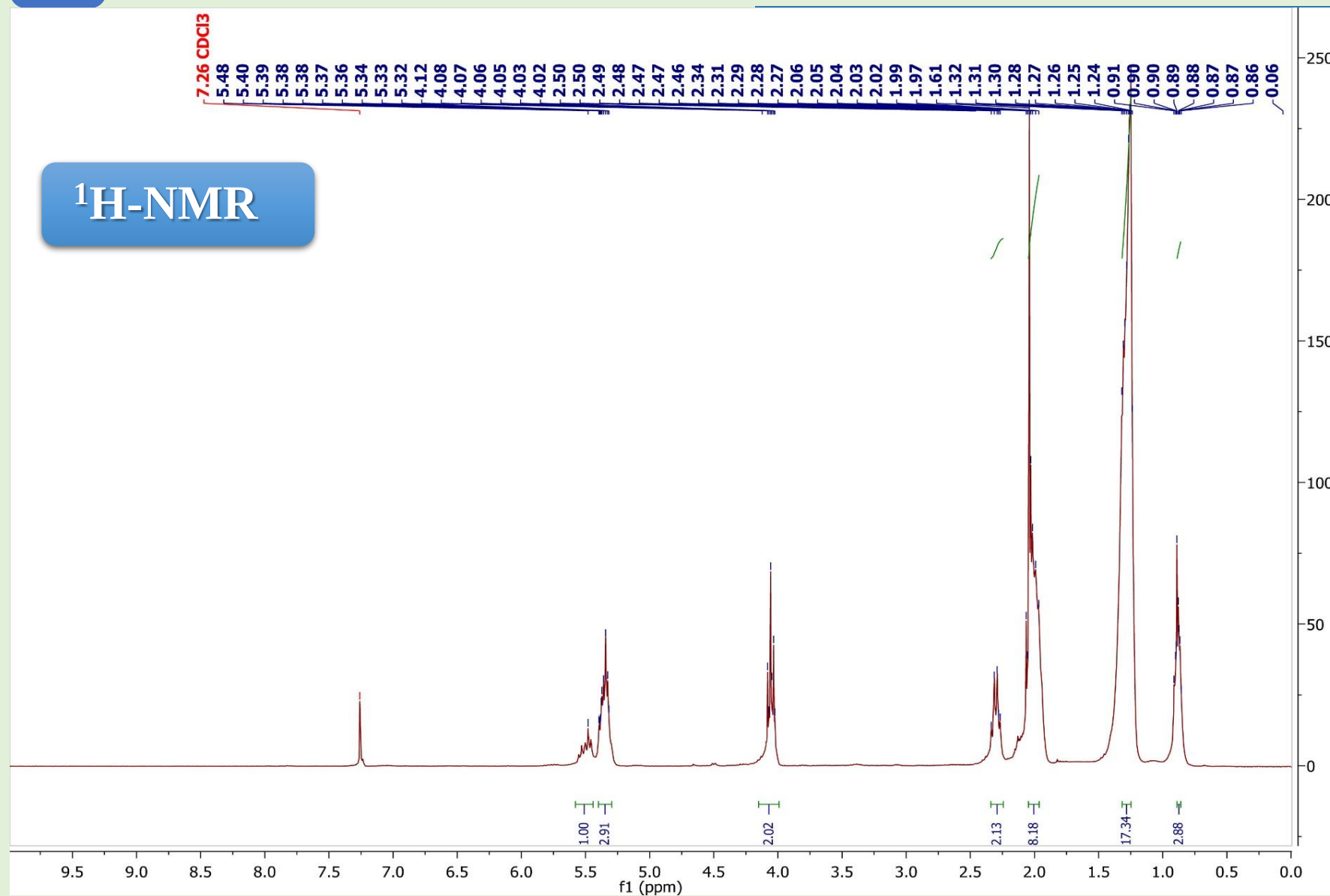


2

E3Z13-18:Ac E3,Z13-octadecadienyl acetate



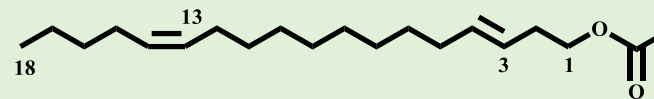
¹H-NMR



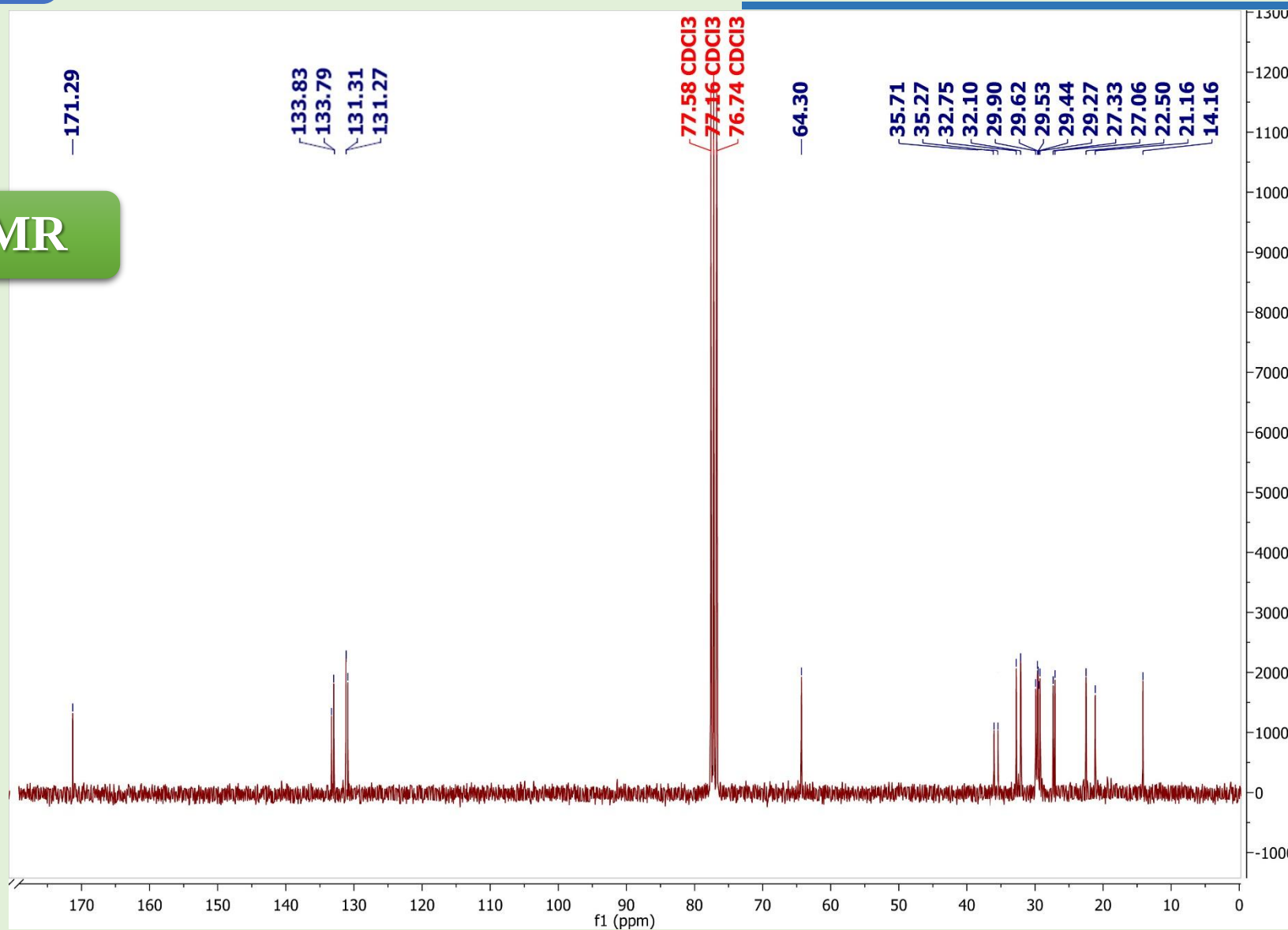


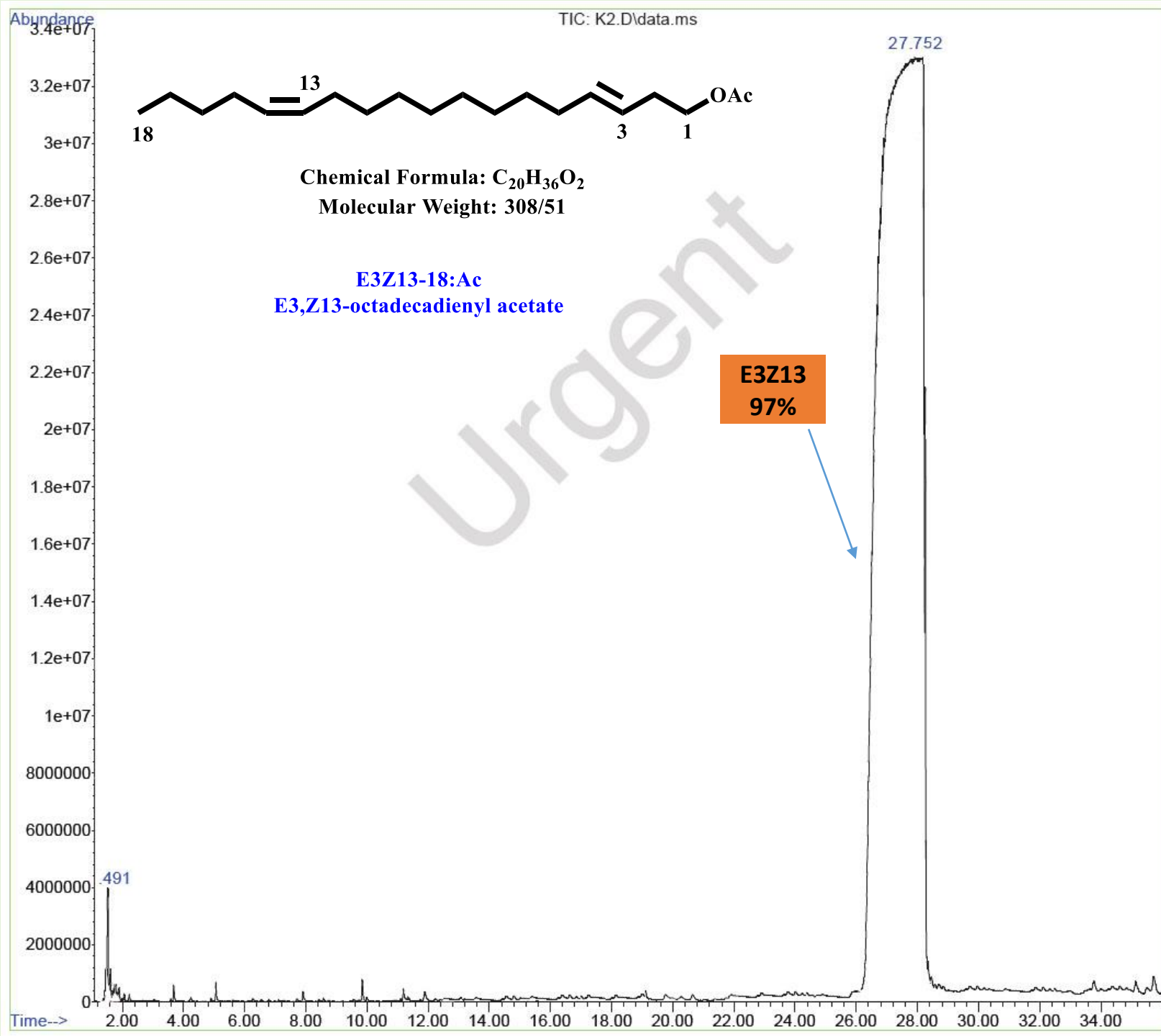
2

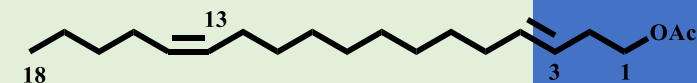
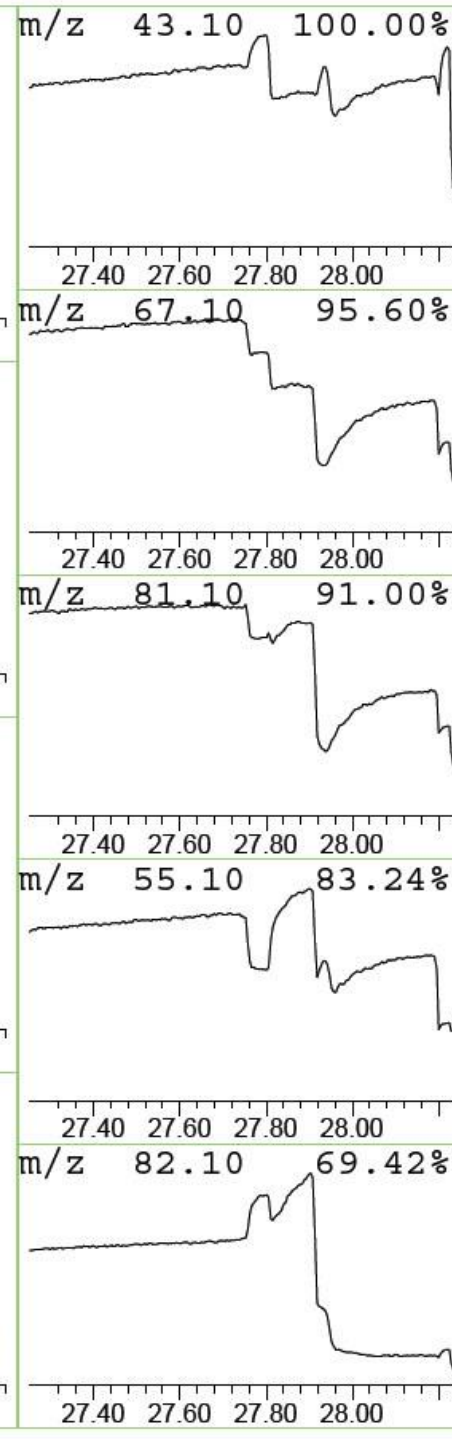
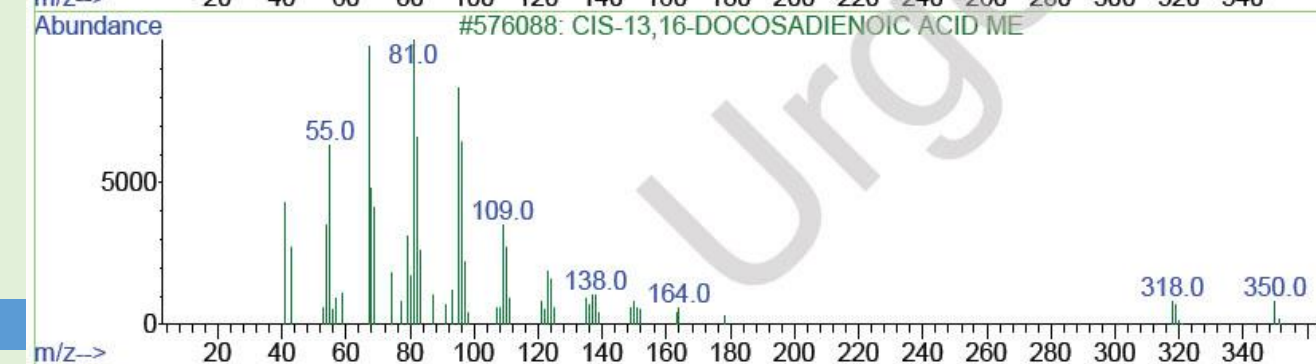
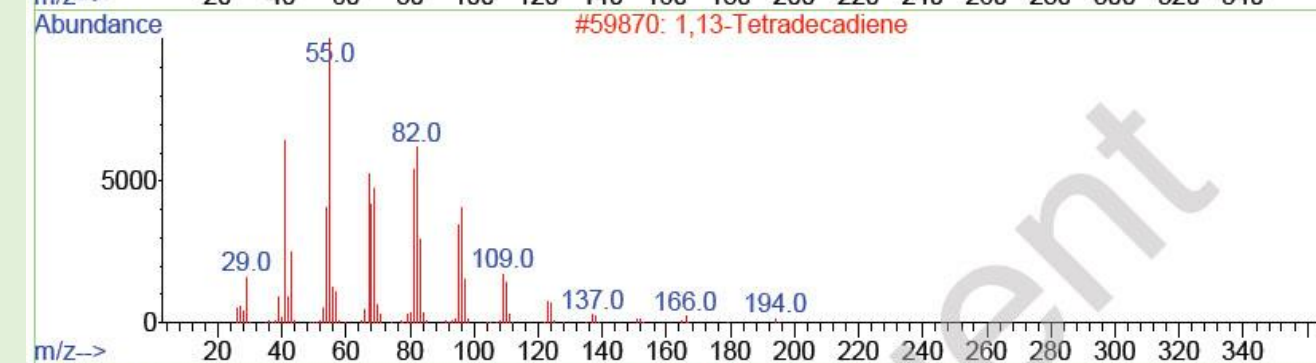
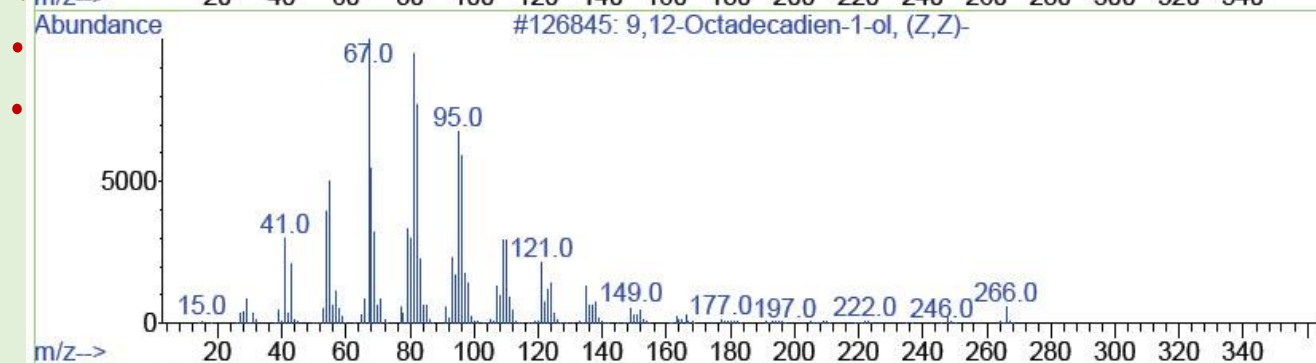
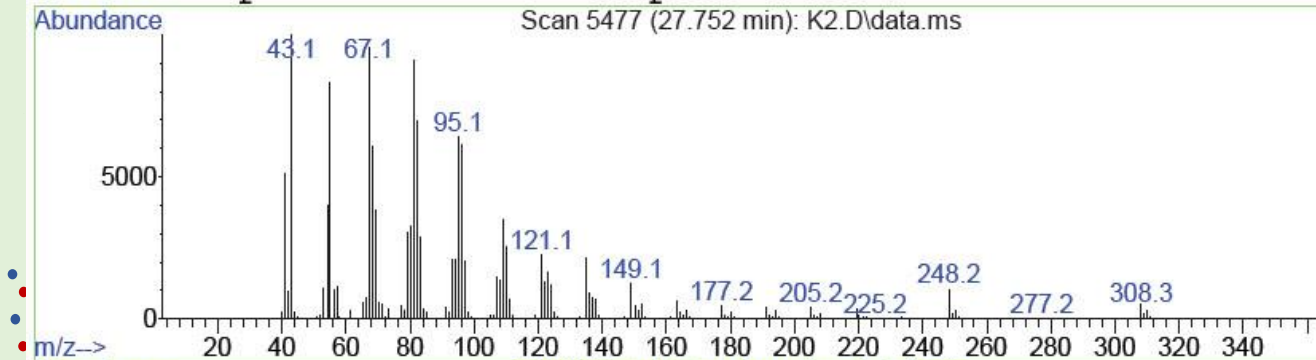
E3Z13-18:Ac E3,Z13-octadecadienyl acetate



¹³C-NMR

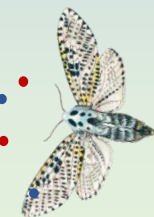






Chemical Formula: $C_{20}H_{36}O_2$
Molecular Weight: 308/51

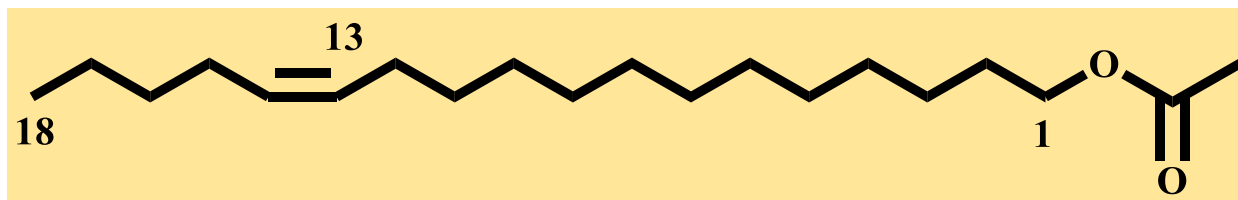
E3Z13-18:Ac
E3,Z13-octadecadienyl acetate



جزء ٣

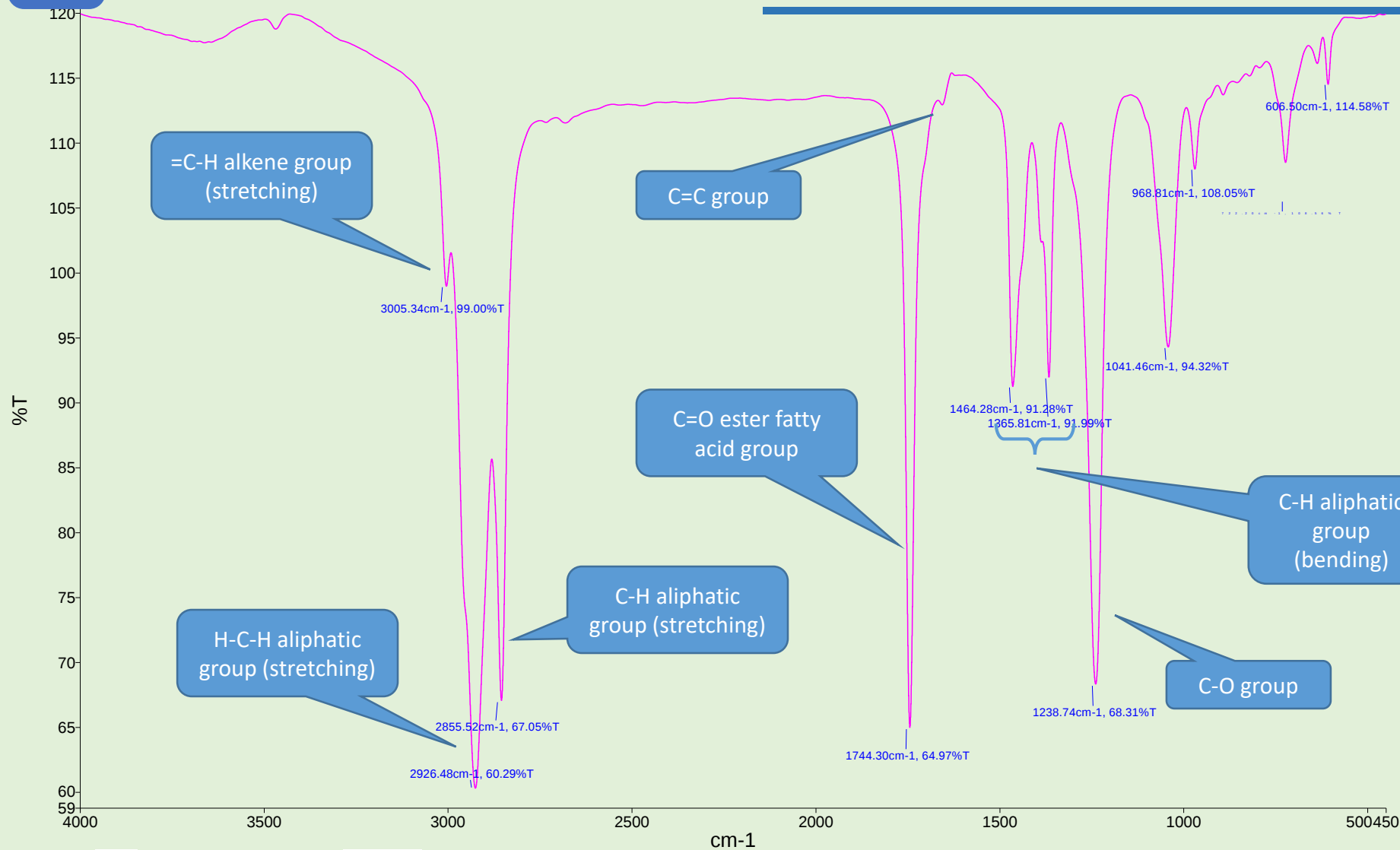
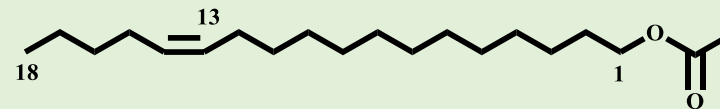
3

Z13-18:Ac
(Z)-13-octadecenyl acetate



3

Z13-18:Ac (Z)-13-octadecenyl acetate



Name

K3_1_1

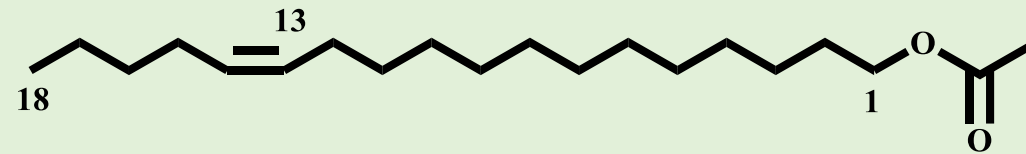
Description

Sample 222 By Administrator Date Sunday, December 31 2023



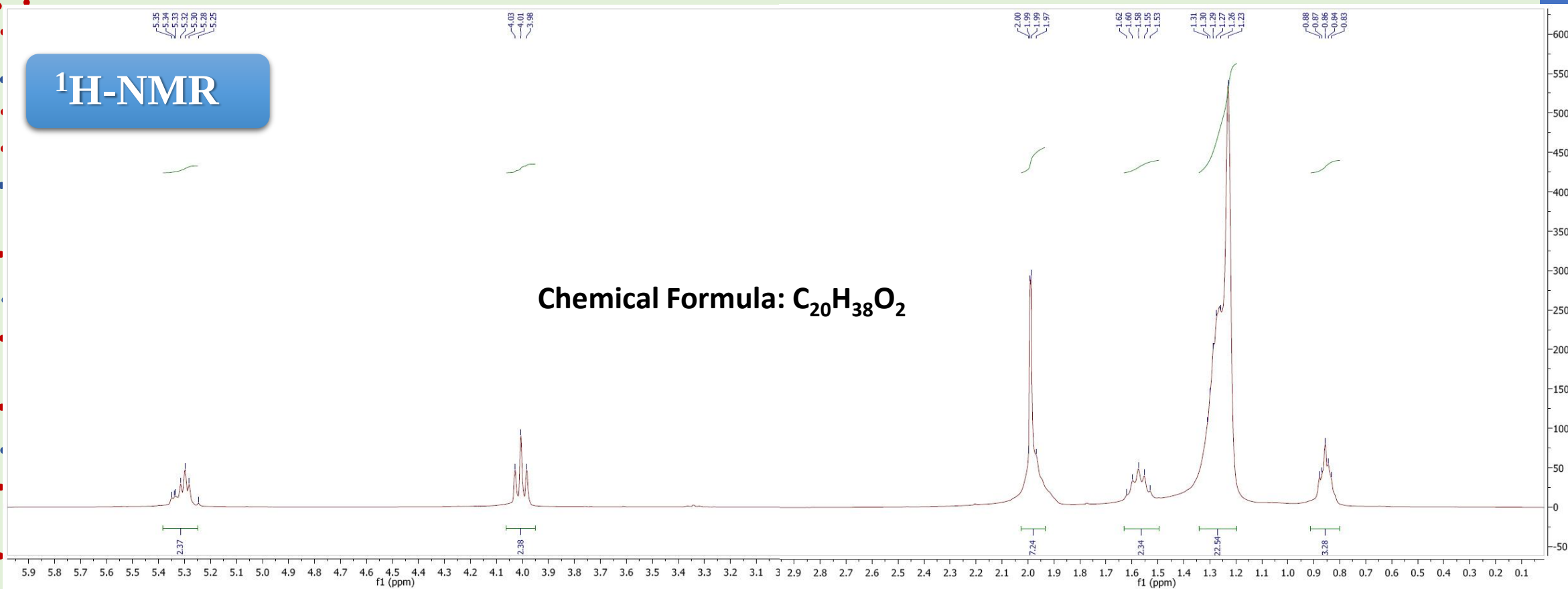
3

Z13-18:Ac (Z)-13-octadecenyl acetate



Chemical Formula: $C_{20}H_{38}O_2$

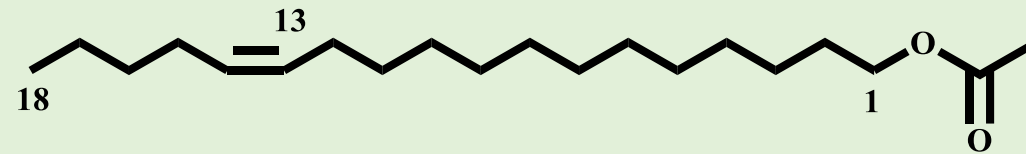
1H -NMR



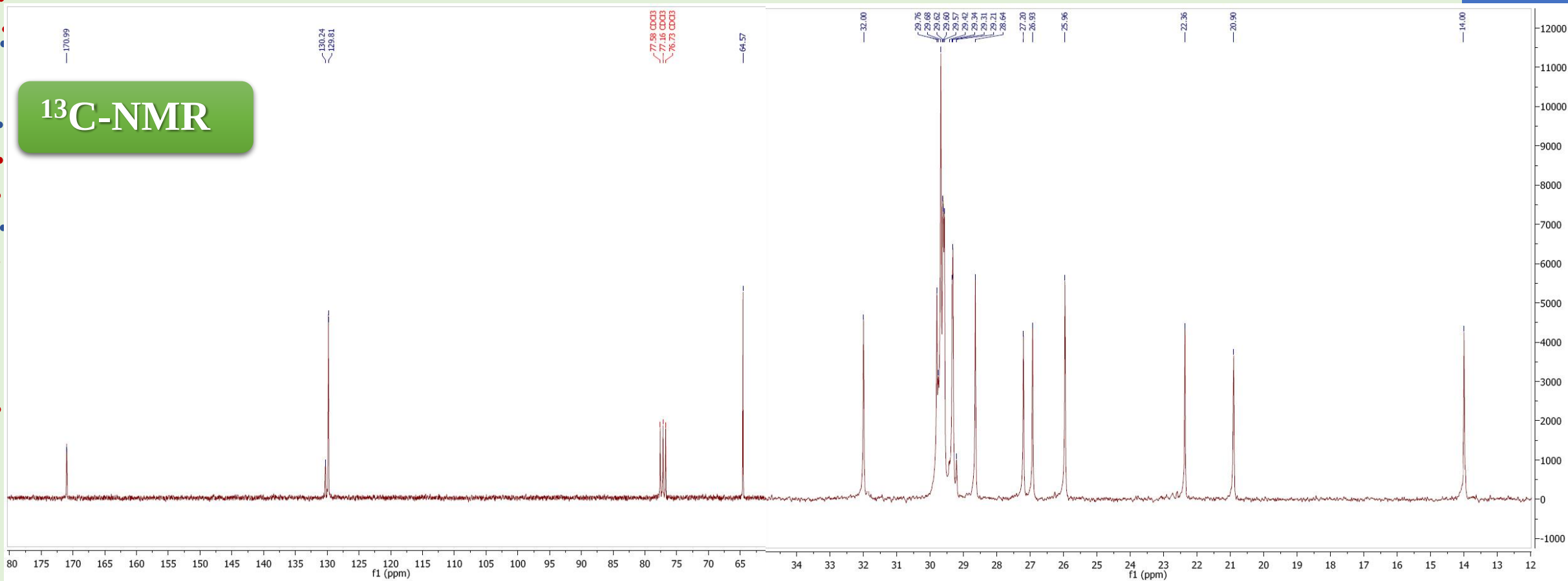


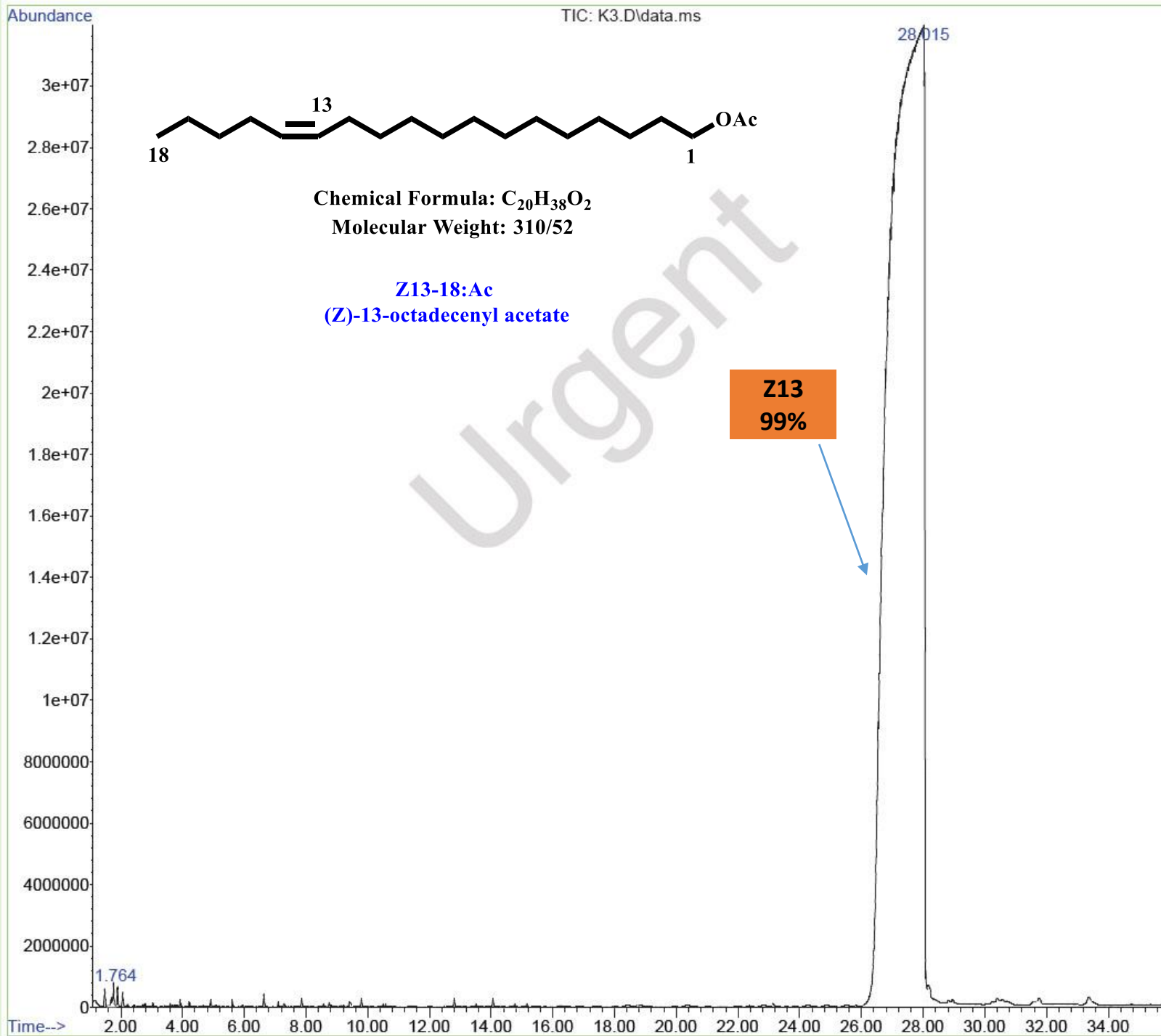
3

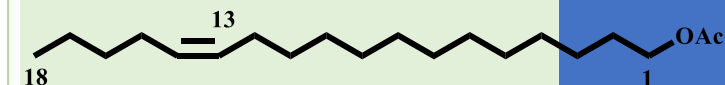
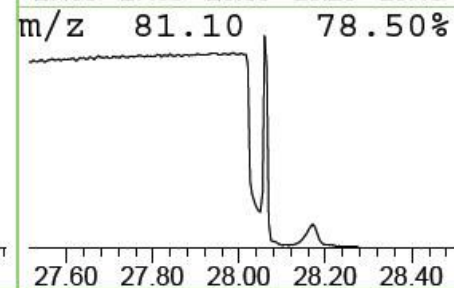
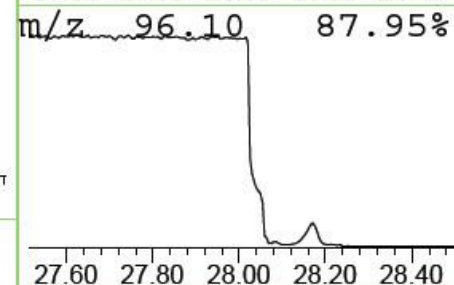
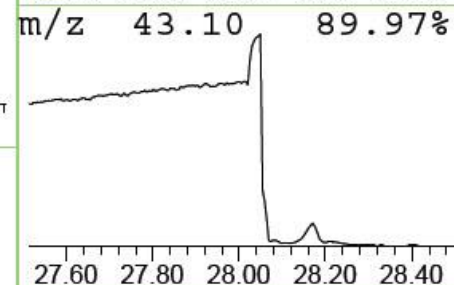
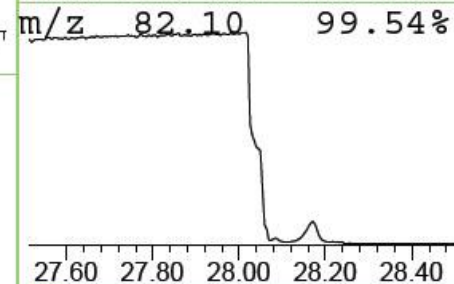
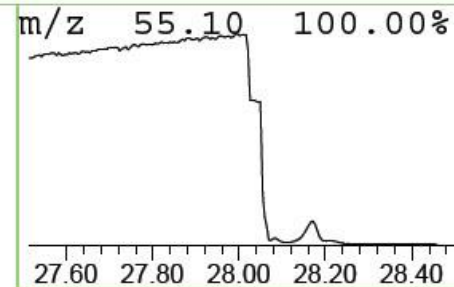
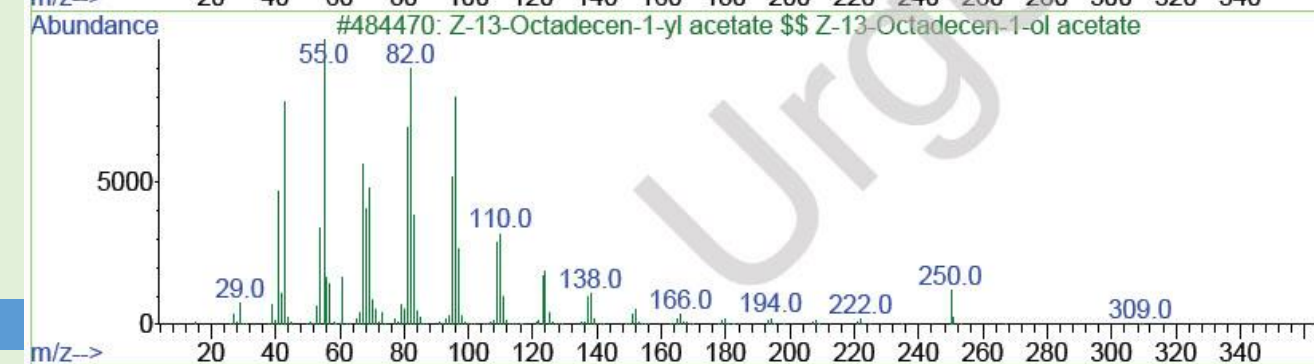
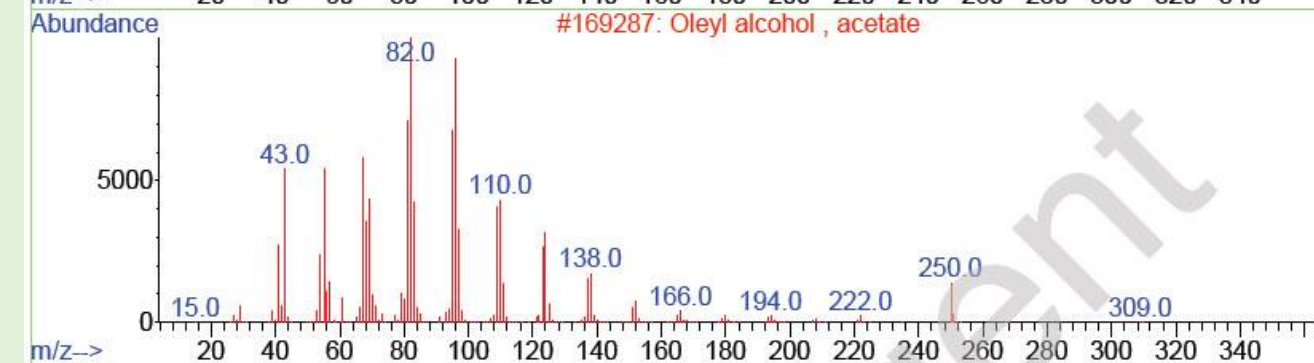
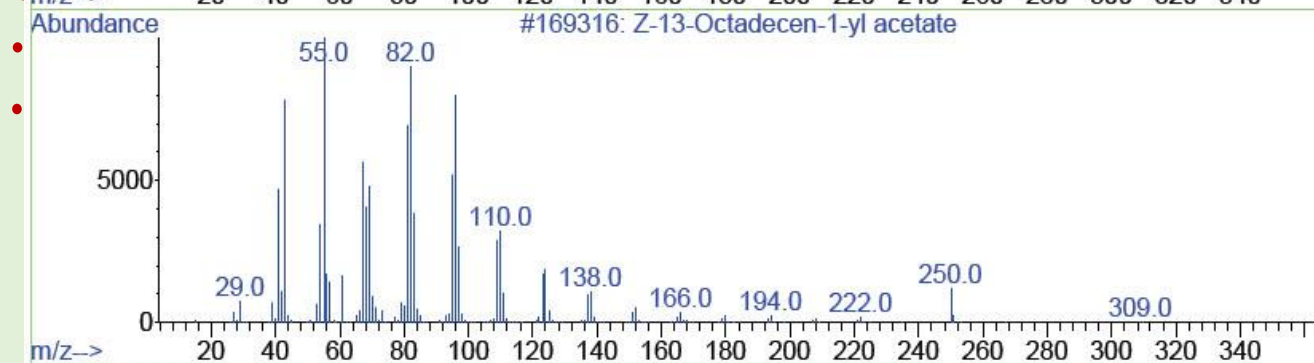
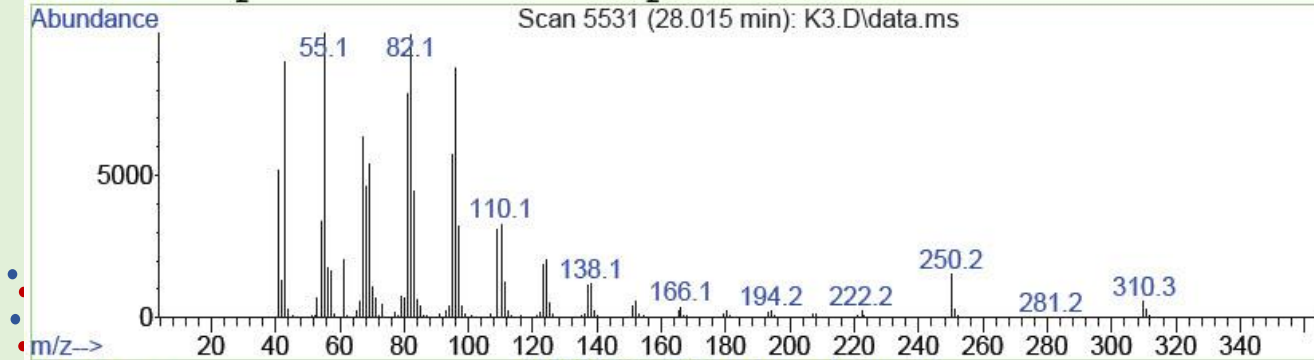
Z13-18:Ac (Z)-13-octadecenyl acetate



Chemical Formula: $C_{20}H_{38}O_2$





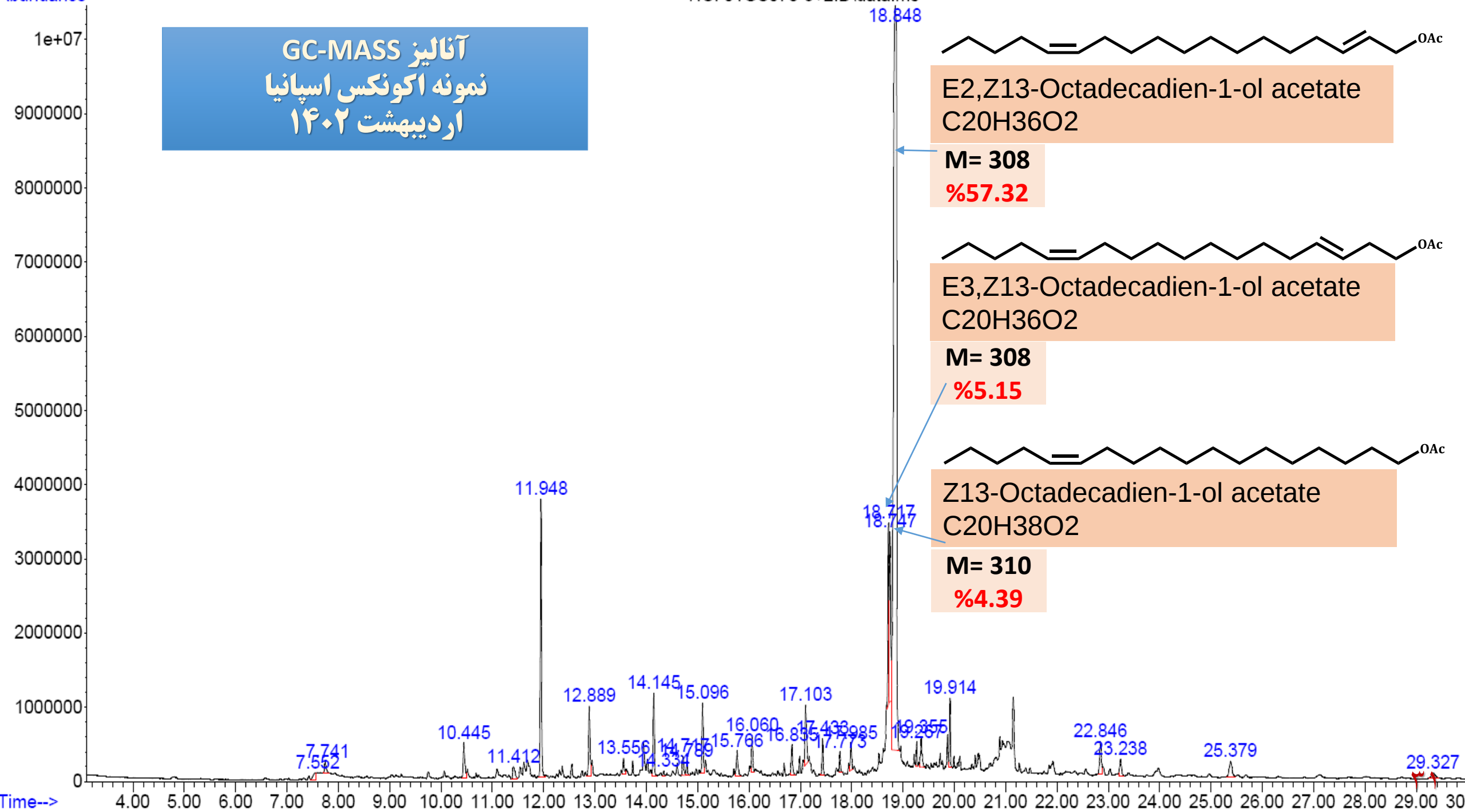


Chemical Formula: $C_{20}H_{38}O_2$
Molecular Weight: 310/52

Z13-18:Ac
(Z)-13-octadecenyl acetate



نمونه تجاری

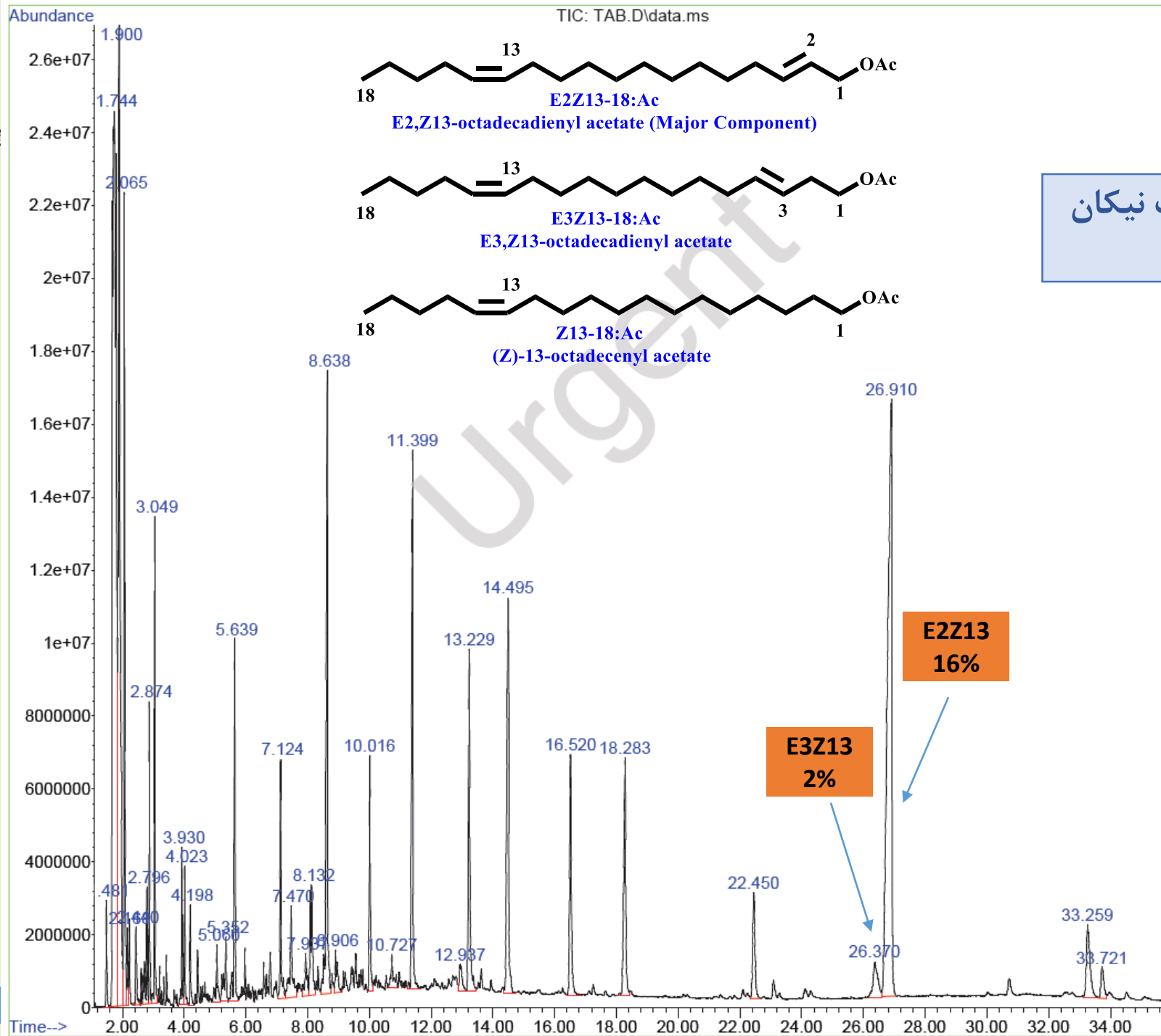


	%	Ingredient
Pheromones	67%	E2,Z13-Octadecadien-1-ol acetate
		E3,Z13-Octadecadien-1-ol acetate
		Z13-Octadecadien-1-ol acetate
Antioxidant	8%	Butylated hydroxytoluene (BHT)
Other chemicals	25%	Additives

Pheromones	In Dispenser	In pheromone
E2,Z13-Octadecadien-1-ol acetate	57.32%	86%
E3,Z13-Octadecadien-1-ol acetate	5.15%	7.7%
Z13-Octadecadien-1-ol acetate	4.39%	6.6%

• فرمون وارداتی (اکونکس) دارای فرمولاسیون به شرح جدول بالا است. از این جدول می‌توان دریافت که نمونه وارداتی، علاوه بر سه جزء اصلی فرومونی، دارای آنتی اکسیدان و مجموعه‌ای از مولکول‌های افزودنی است که به فرمولاسیون اضافه شده‌اند.

نمونه طبیعت دوست نیکان
دی ماه ۱۴۰۲





با تشکر

