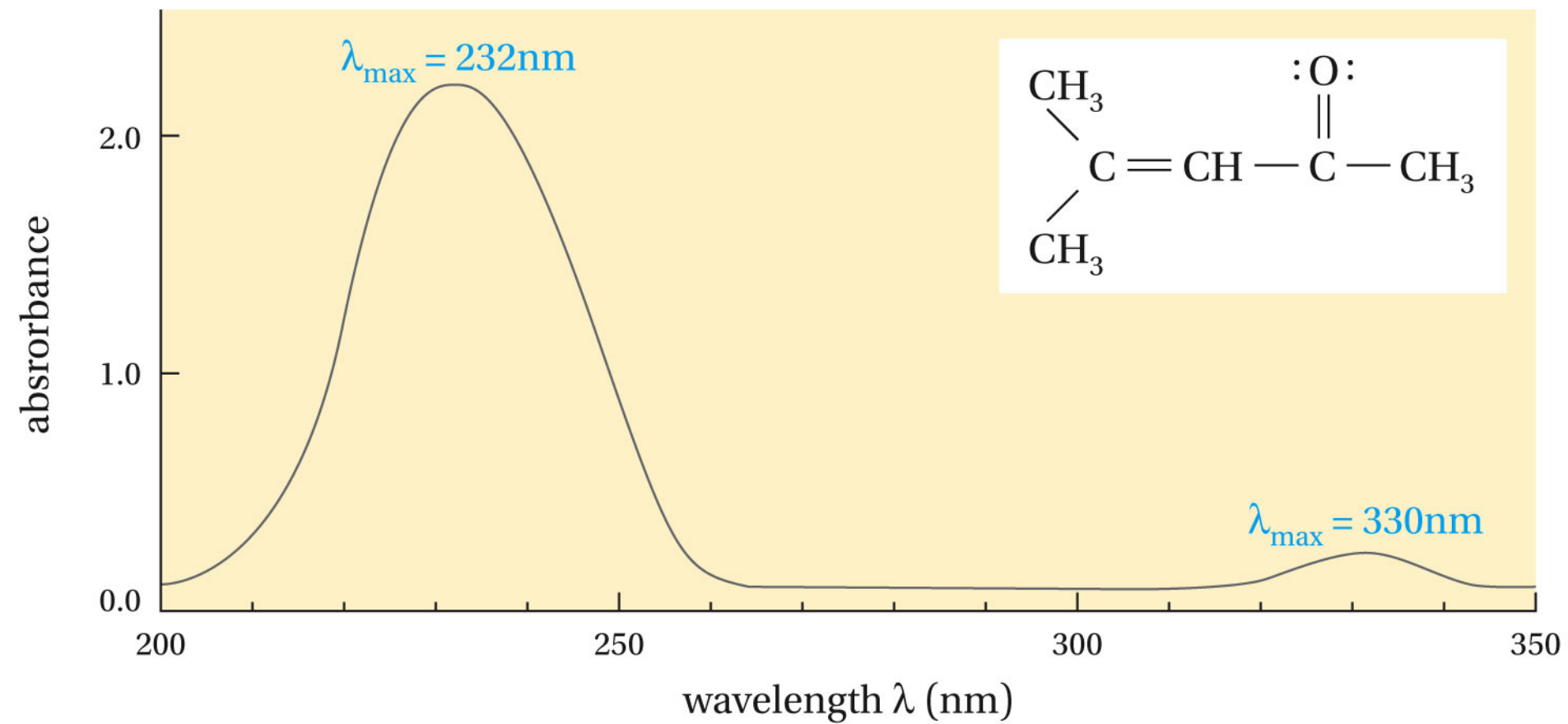


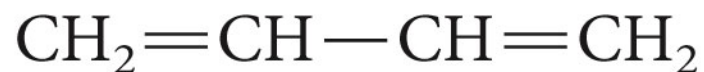
# Visible and Ultraviolet Spectroscopy

**Table 12.5**  **Units for Visible-Ultraviolet Spectra**

visible (vis)	400–800 nm (or $m\mu$ )	4000–8000 Å
ultraviolet (uv)	200–400 nm (or $m\mu$ )	2000–4000 Å

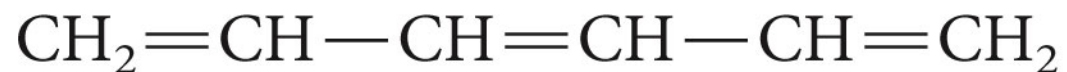


# Conjugation



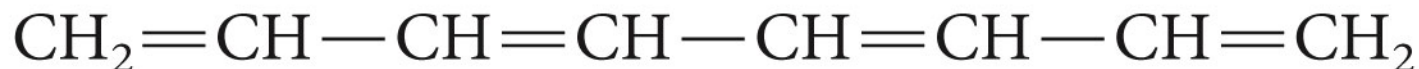
$$\lambda_{\text{max}} = 220 \text{ nm}$$

$$(\epsilon = 20,900)$$



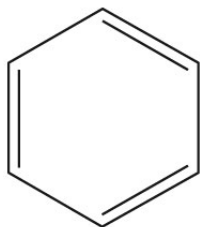
$$\lambda_{\text{max}} = 257 \text{ nm}$$

$$(\epsilon = 35,000)$$

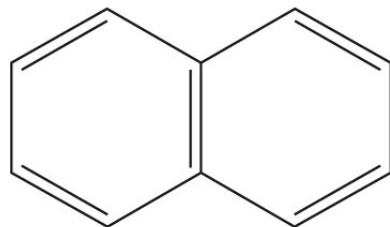


$$\lambda_{\text{max}} = 287 \text{ nm}$$

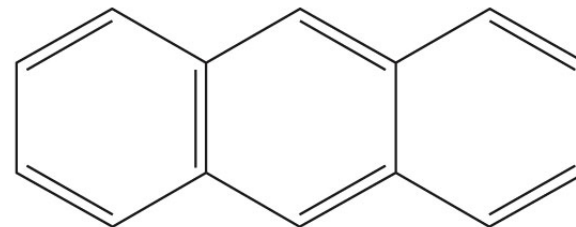
$$(\epsilon = 52,000)$$



$\lambda_{\max} = 255 \text{ nm}$   
( $\epsilon = 215$ )

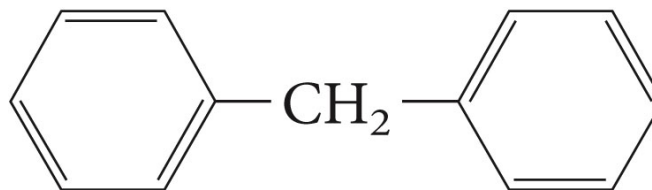
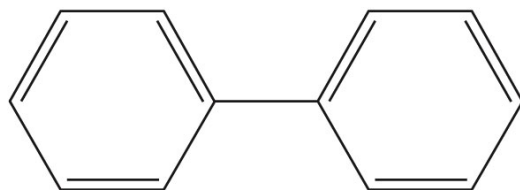


$\lambda_{\max} = 314 \text{ nm}$   
( $\epsilon = 289$ )



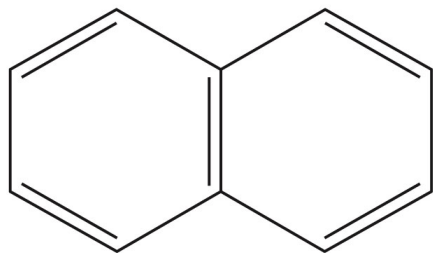
$\lambda_{\max} = 380 \text{ nm}$   
( $\epsilon = 9000$ )

Which of the following aromatic compounds do you expect to absorb at longer wavelengths?

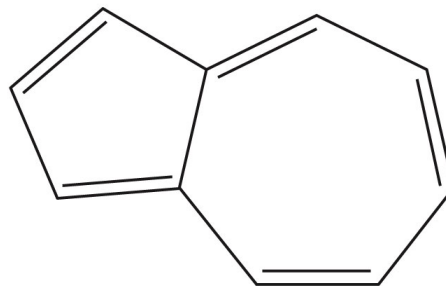


### Problem 12.15

Naphthalene is colorless, but its isomer azulene is blue. Which compound has the lower energy pi-electron transition?

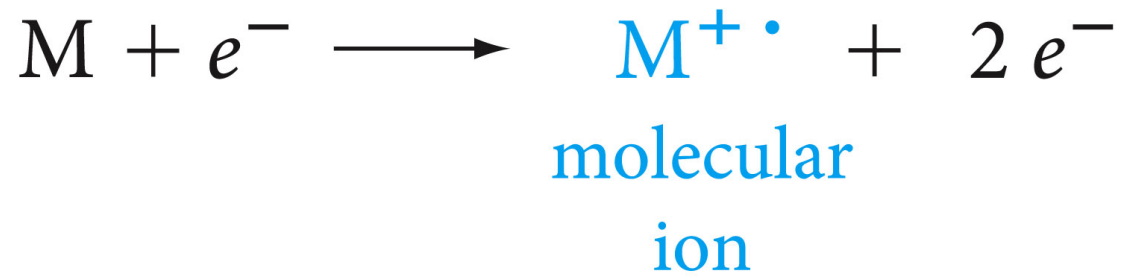


naphthalene



azulene

# Mass Spectrometry





methanol molecular  
ion ( $m/z = 32$ )



## Daughter ions

