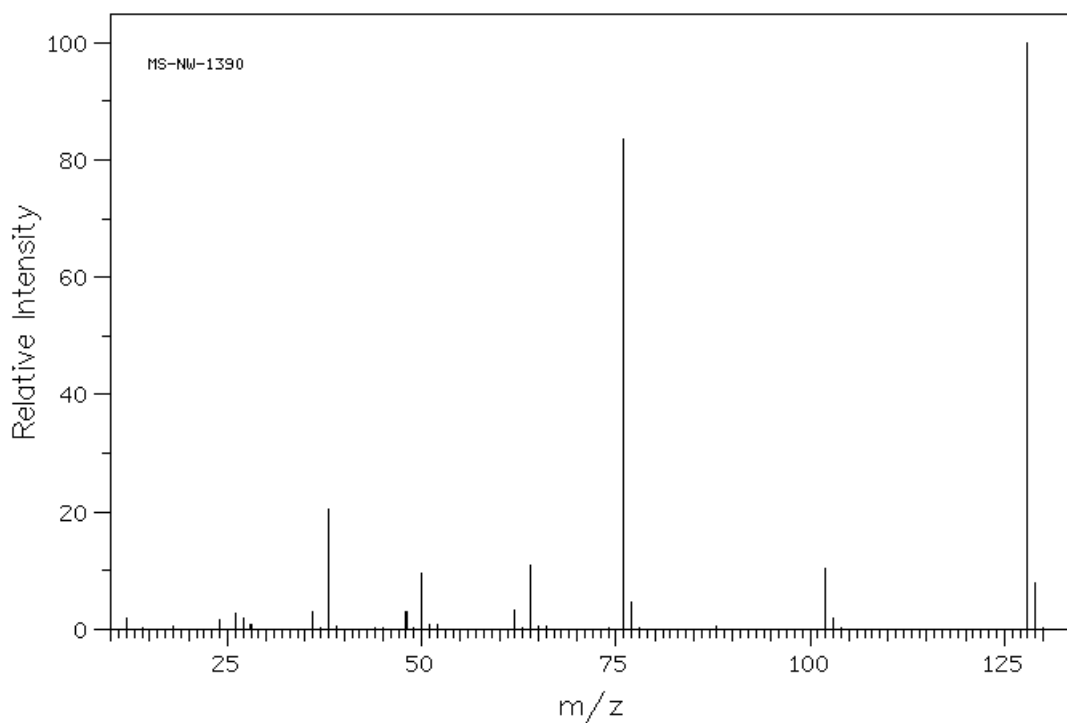


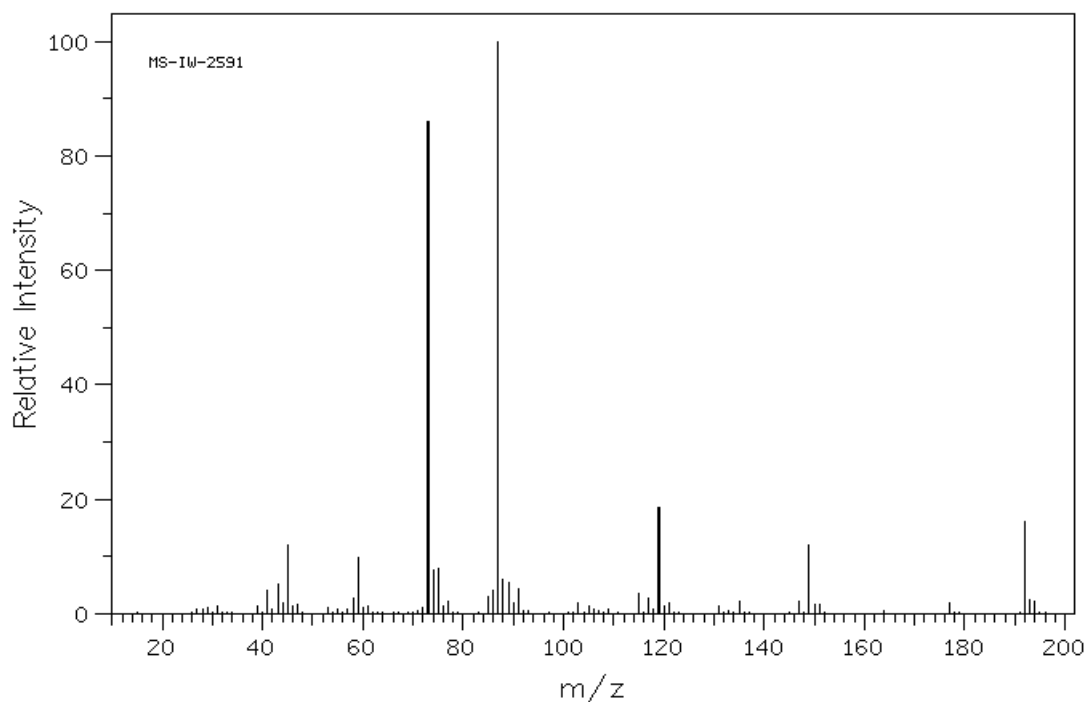
These problems should be turned in by Friday, March 15. Or, if you prefer, Monday, March 25; or Wednesday, the 27th. Let's talk....

1. Below is shown the mass spectrum of a compound. Suggest elemental compositions for the peaks at $(m/z) = 128, 102,$ and $76,$ and identify peaks which correspond to odd and/or even electron ions. Find the ring + double bond index for each. What evidence is there to suggest that the peak at $(m/z) = 126$ is/is not the molecular ion?



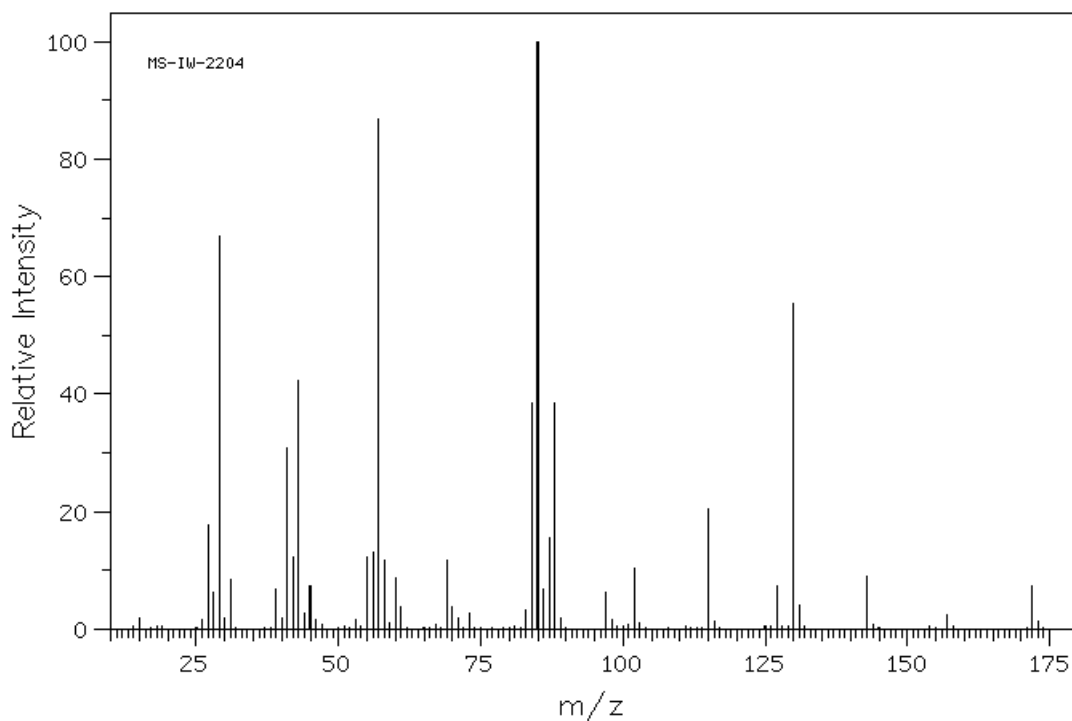
12.0	2	36.0	2	62.0	3	102.0	10
24.0	1	38.0	20	64.0	11	103.0	1
26.0	2	48.0	3	76.0	83	128.0	100
		50.0	9	77.0	4	129.0	8

2. Below is shown the mass spectrum of an unknown compound whose molecular ion appears at $m/z=192$. Provide plausible elemental compositions for the peaks at $m/z=192$, 149, 119, 87 and 72, and calculate the ring+double bond indices for your proposed elemental compositions.



m/z											
29.0	1	53.0	1	76.0	1	103.0	2	149.0	11		
31.0	1	58.0	2	77.0	2	105.0	1	150.0	1		
39.0	1	59.0	9	85.0	3	115.0	3	151.0	1		
41.0	4	60.0	1	86.0	4	117.0	2	177.0	2		
43.0	5	61.0	1	87.0	100	119.0	18	192.0	16		
44.0	1	72.0	1	88.0	6	120.0	1	193.0	2		
45.0	12	73.0	85	89.0	5	121.0	1	194.0			
46.0	1	74.0	7	90.0	1	131.0	1				
47.0	1	75.0	8	91.0	4	147.0	2				

3. Below is shown the mass spectrum of an unknown compound whose molecular ion appears at $m/z=172$. Identify any odd electron ions observed in the spectrum, and any other “important” peaks you see, hazard a guess as to the identity of the “lost” portions of the molecules based on your identifications and calculate elemental compositions where you think it appropriate to attempt to do so. Identify any “families” of ions in the low m/z region of the mass spectrum which you believe might be diagnostic.



m/z		m/z		m/z		m/z	
15.0	2	45.0	7	73.0	2	115.0	20
26.0	1	46.0	1	83.0	3	116.0	1
27.0	17	53.0	1	84.0	38	127.0	7
28.0	6	55.0	12	85.0	100	130.0	55
29.0	66	56.0	13	86.0	6	131.0	4
30.0	1	57.0	86	87.0	15	143.0	8
31.0	8	58.0	11	88.0	38	157.0	2
39.0	6	59.0	1	89.0	2	172.0	7
40.0	1	60.0	8	97.0	6	173.0	1
41.0	30	61.0	3	98.0	1		
42.0	12	69.0	11	102.0	10		
43.0	42	70.0	3	104.0	1		
44.0	2	71.0	1				