

Characterization of Materials

NAME _____

HW

Professor Garofalini

atom-atomic #	$K\alpha$ (eV)	$L\alpha$ (eV)	K edge(eV)	L edge (eV)	$\mu_m(\text{cm}^2/\text{gm})$ Mo	$\mu_m(\text{cm}^2/\text{gm})$ Cu
N – 7	390		400	10	0.79	7.14
O – 8	520		532	12	1.147	11.03
Mg – 12	1254	43	1303	49	3.98	40.88
Al – 13	1487	66	1559		5.04	50.23
Si – 14	1739	93	1837	98	6.53	65.32
Cl – 17		194	2820	198	11.64	109.2
K – 19	3312	278	3608	296	16.2	148.4
Ca - 20	3690	340	4039	349	19	171

The Table above lists various emitted x-rays and edges for the elements shown, as well as the mass absorption coefficients of these elements for Mo $K\alpha$ and Cu $K\alpha$.

Using this Table and you must also draw the Bohr model for the appropriate element, with energies and known information labeled, to help solve the questions and show your calculations.

1. What is the energy of the L edge for Al?
2. What is the energy of the M edge for Si (calculate it from known information given here)?
3. What is the energy of the $h\nu K\alpha$ for Cl (show your math)?