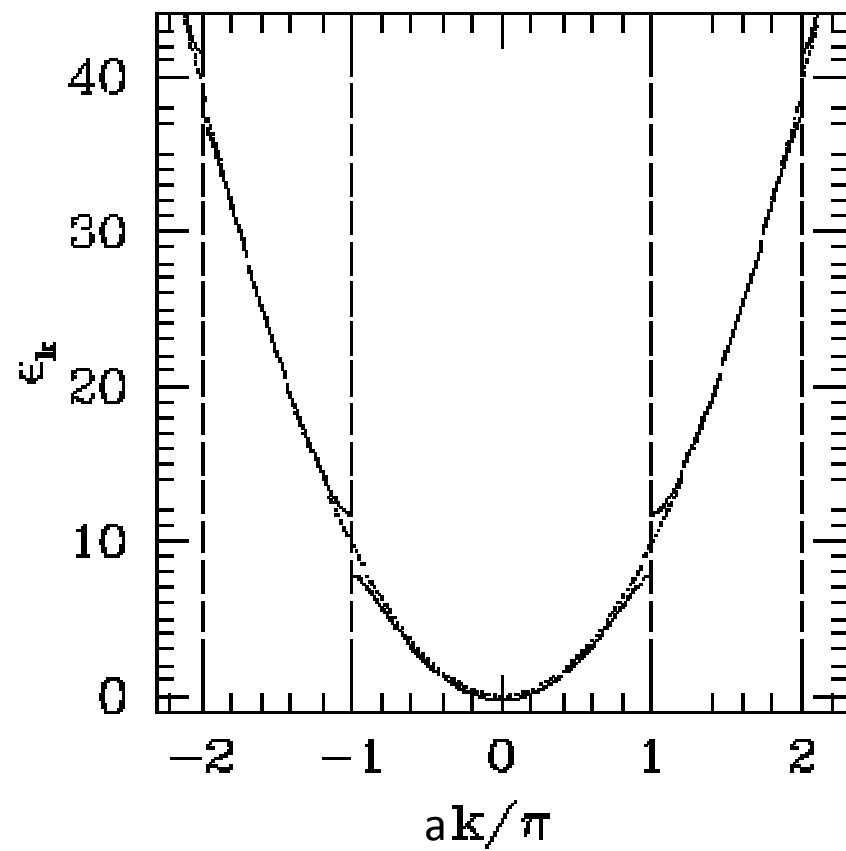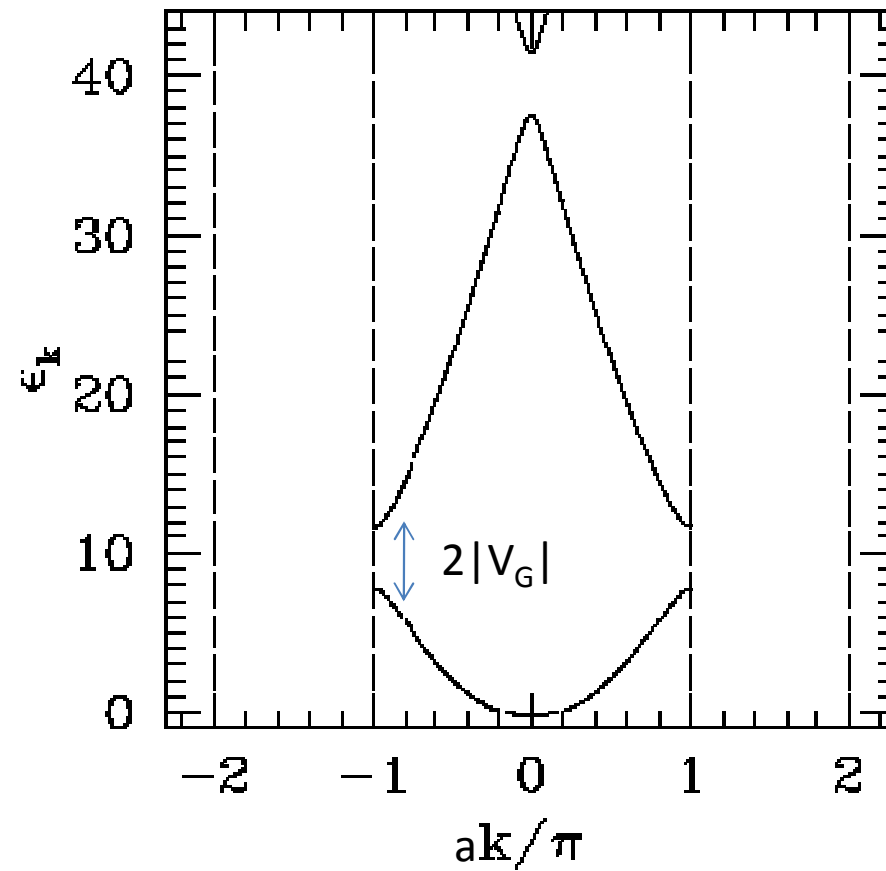Slides
Condensed Matter Physics
Lecture 15
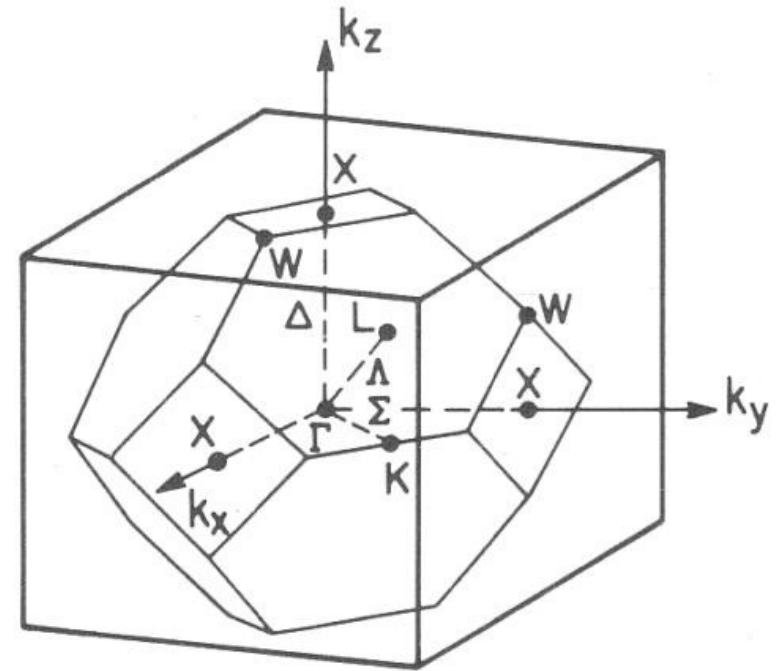
d−1 extended zone
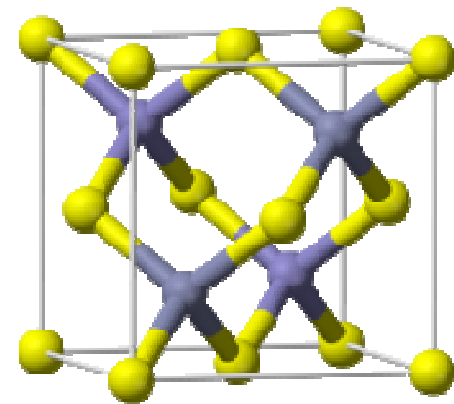

d=1 reduced zone
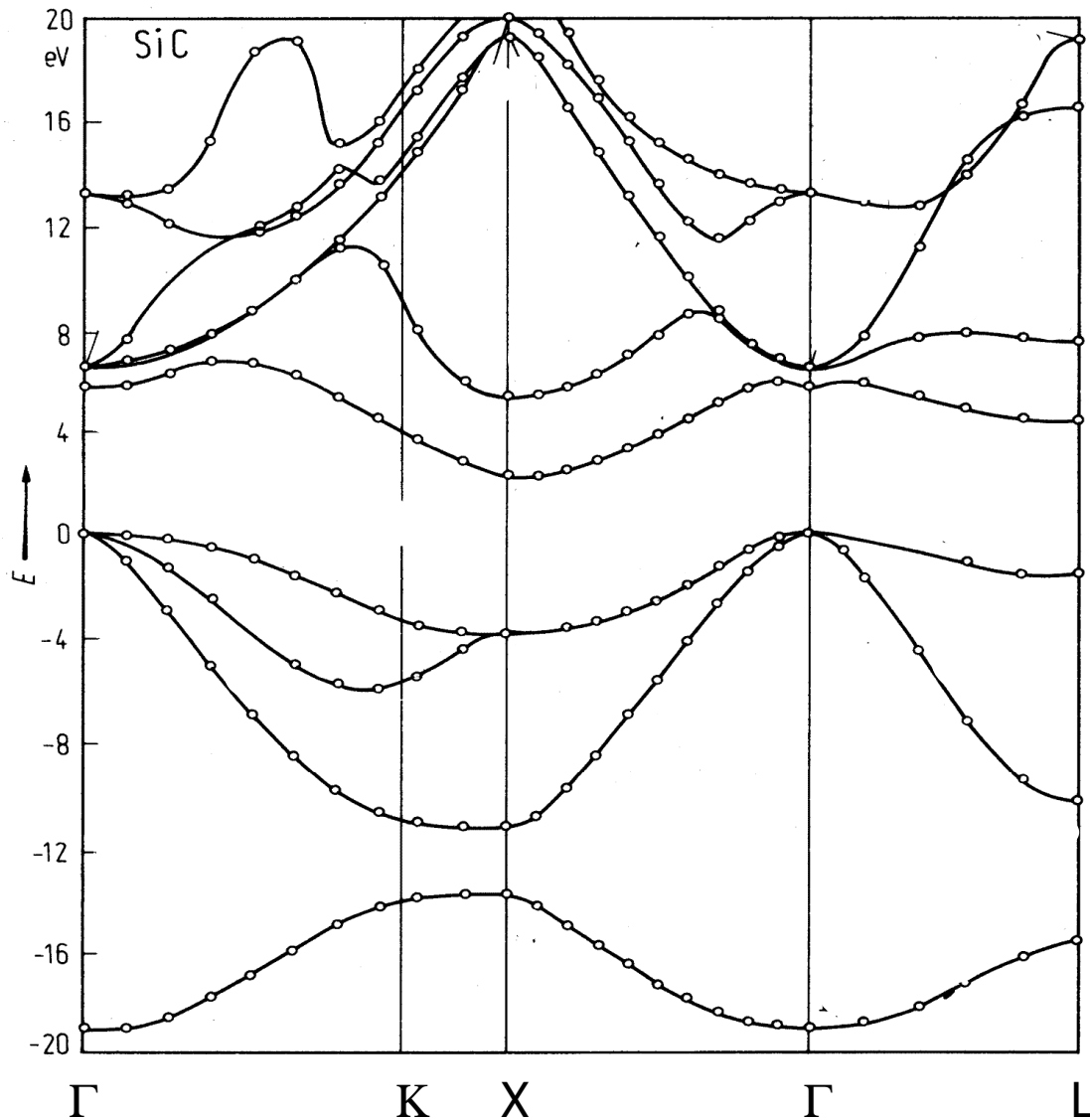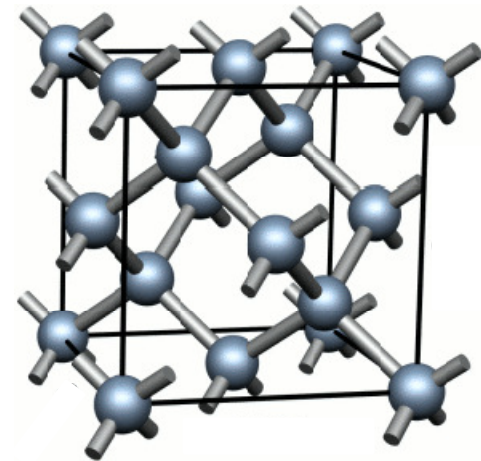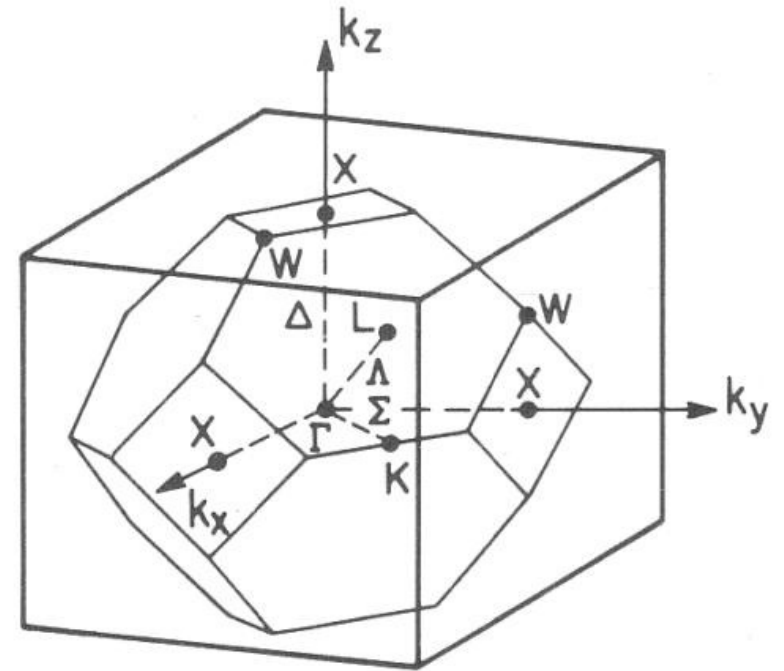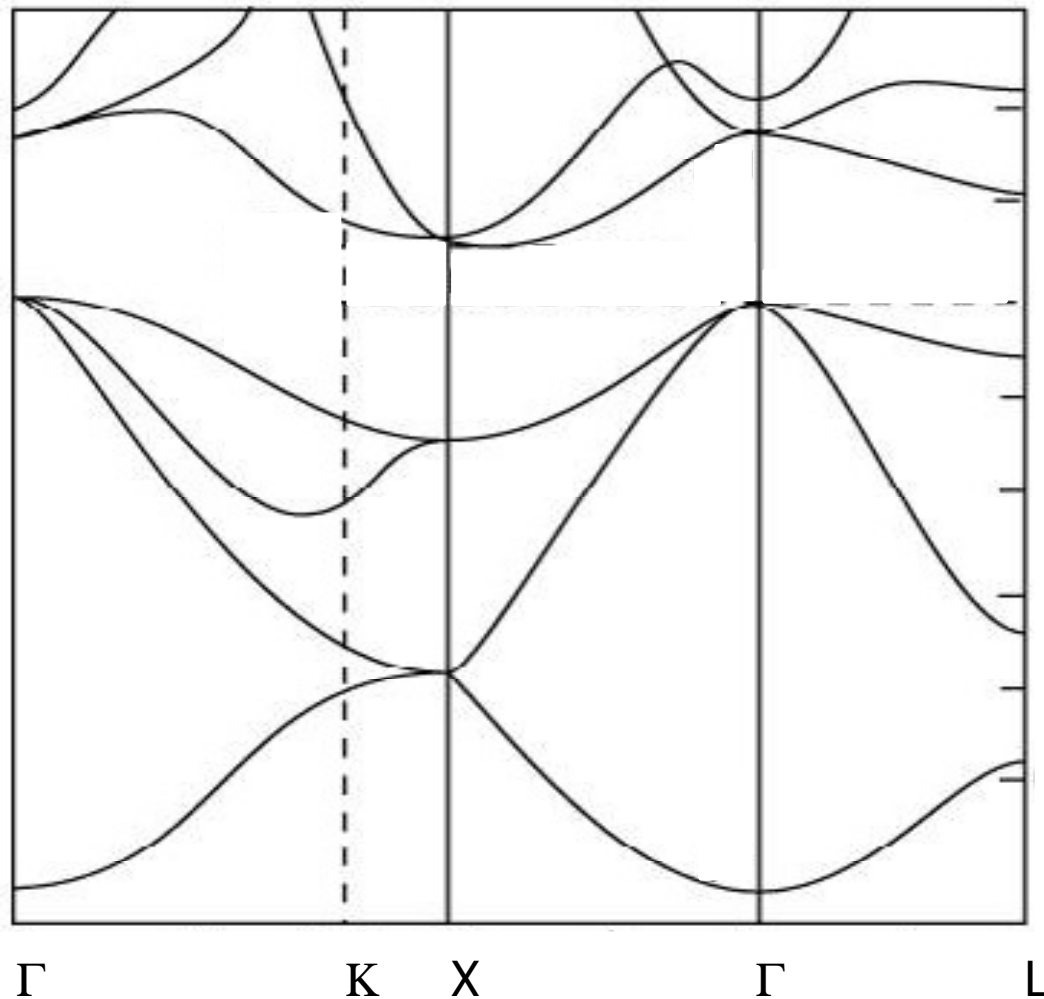
$$2|V_G|$$

1st Brillouin Zone of an FCC lattice
=same shape as Wigner Seitz
cell of a BCC lattice

Silicon Carbide = FCC with a 2-atom basis
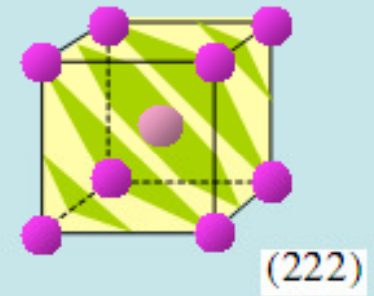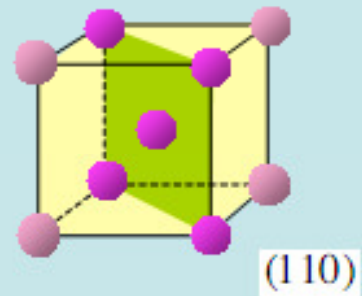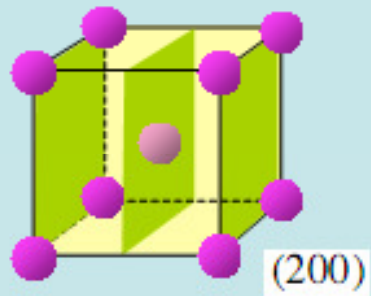Si @ [0,0,0] and C @ [¼, ¼, ¼]
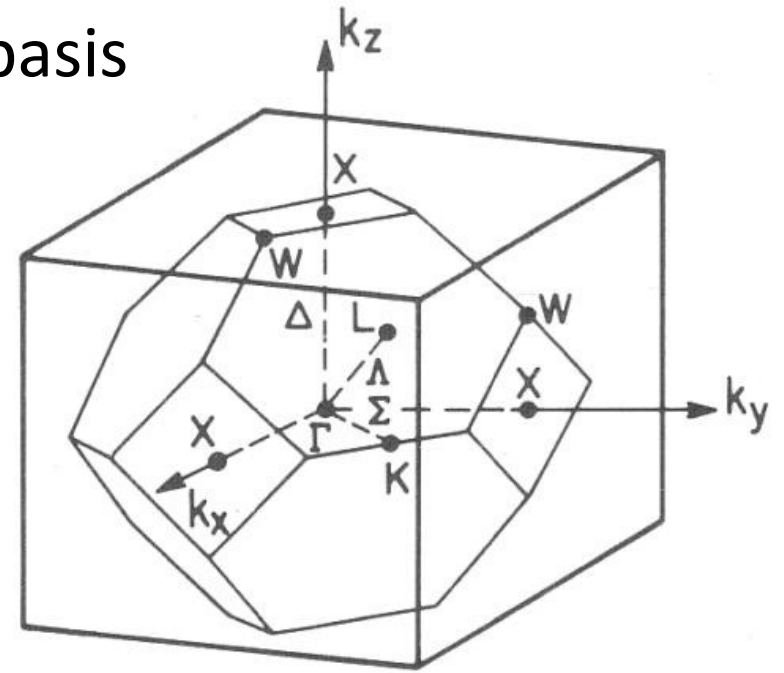
Silicon = FCC with a 2-atom basis
Si @ [0,0,0]   and Si @ [¼, ¼, ¼]

No backscattering at X-point

sc	(100)	(110)	(111)
bcc	(200)	(110)	(222)
fcc	(200)	(220)	(111)
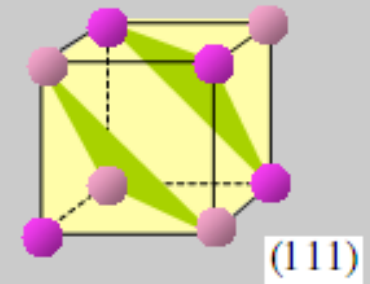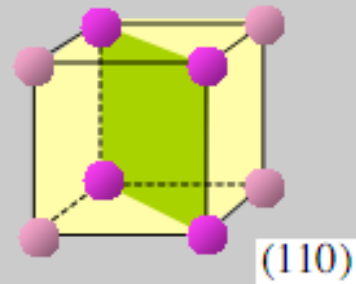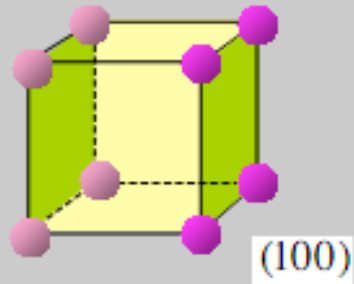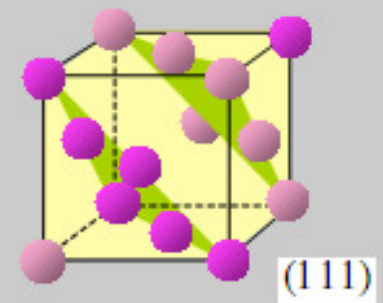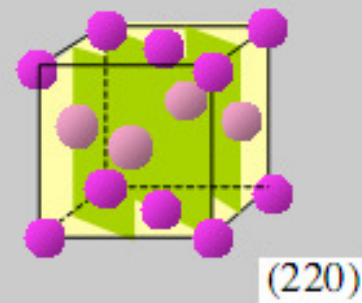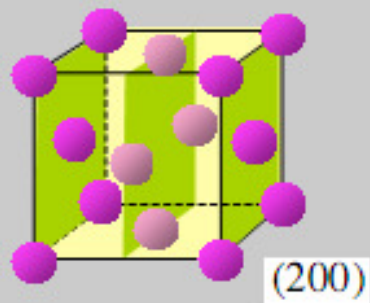
Silicon = FCC with a 2-atom basis
C @ [0,0,0]   and C @ [¼, ¼, ¼]
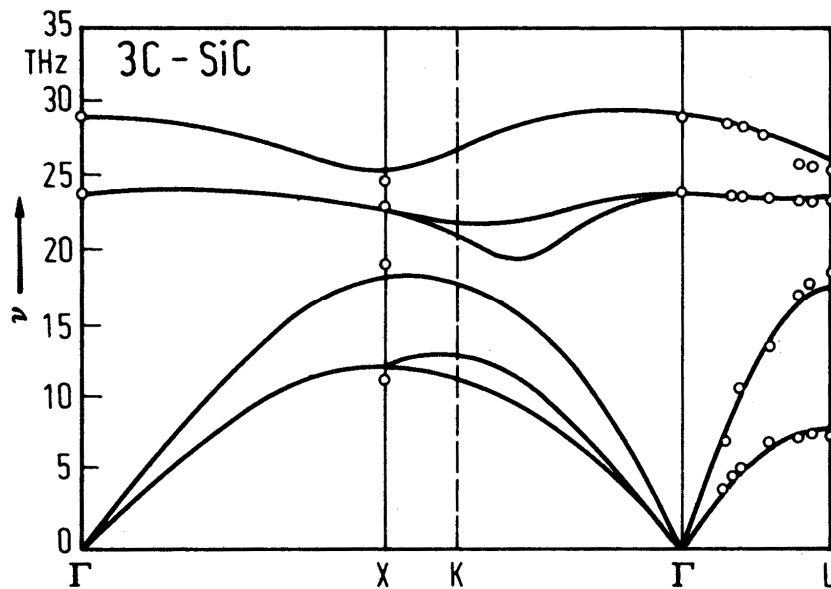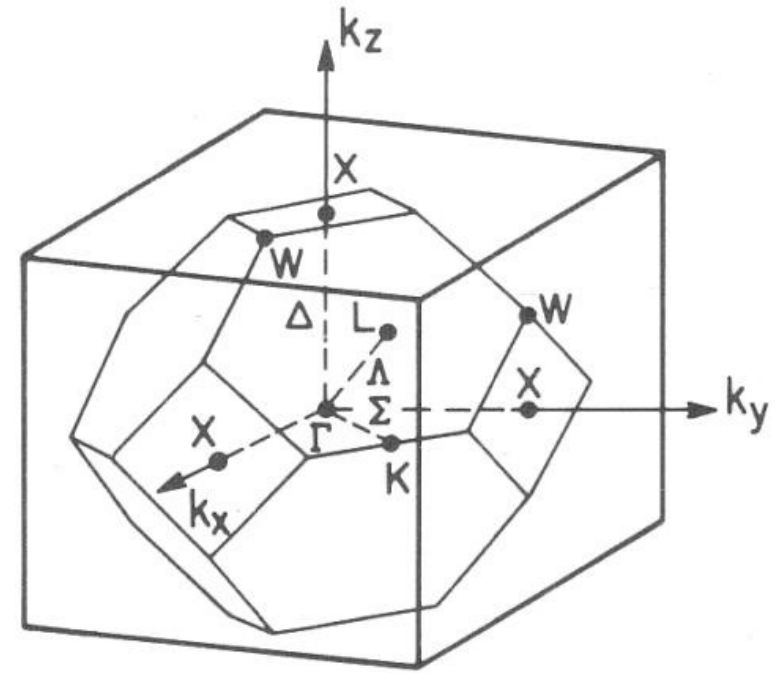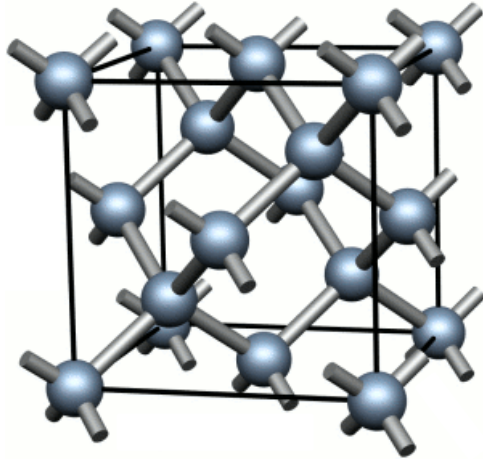
Silicon Carbide Phonons

Silicon Phonons