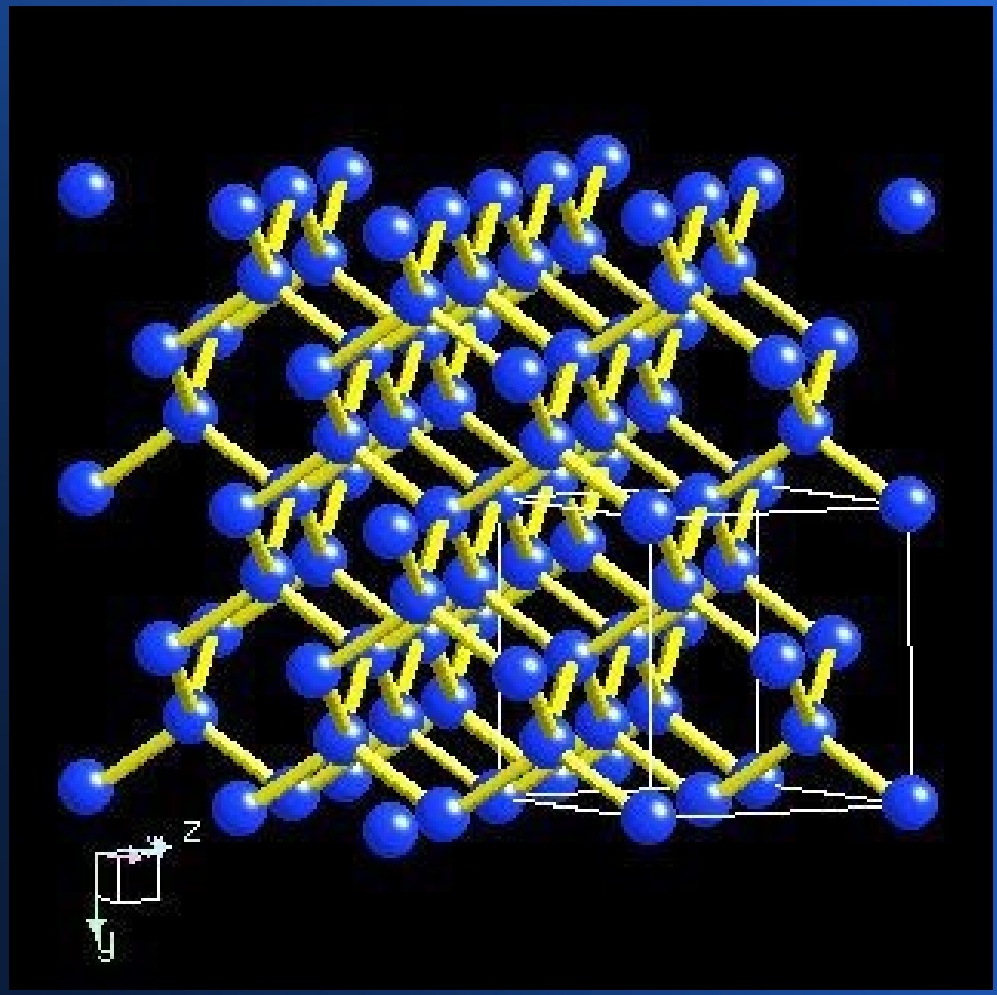
6. lattice waves and thermal properties

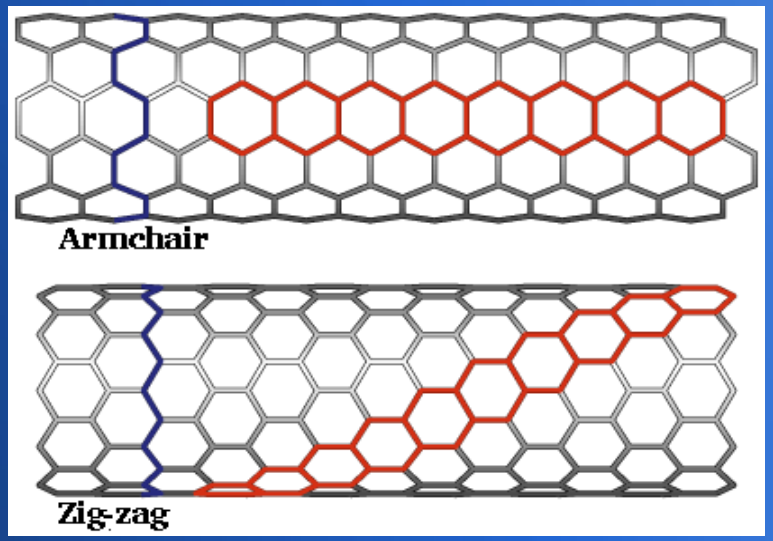


Young's modulus

$$\sigma = E\,\varepsilon$$

Some values of E (in GPa)

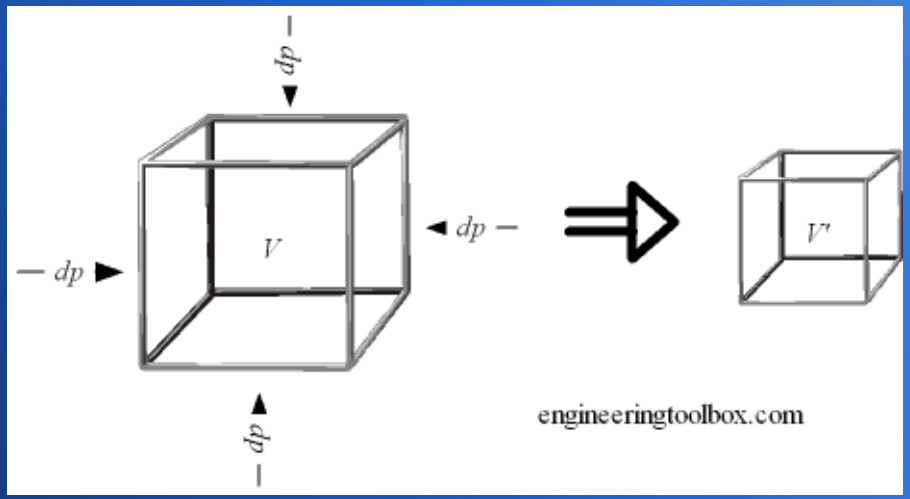
Al	69
Bi	32
Fe et aciers	195-220
diamant	1000
Nanotube de C	1300



Module d'élasticité isostatique (Bulk modulus)

$$K = \frac{\delta p}{\delta V / V} = -V \frac{dp}{dV} \text{ (Pa.)}$$

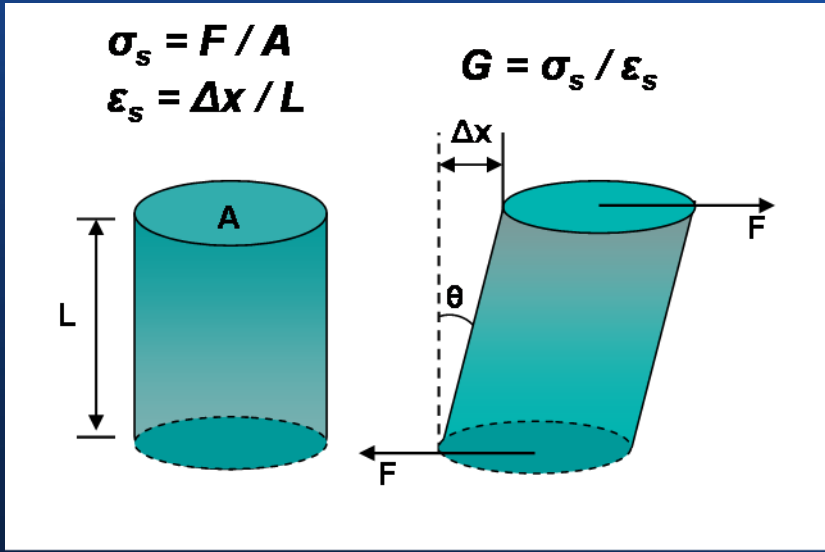
$$\beta = \frac{1}{K} = \frac{\delta v / V}{\delta p} = -\frac{1}{V}\frac{dv}{dp} \text{ (Pa.}^{-1}\text{)}$$



Some values of K (in GPa):

water	2
steel	160
diamond	442

Shear modulus



material	G (GPa)
aluminium	25
diamond	478
steel	79
rubber	0.0006