

# 1 Solve Graphene/Graphite Diffraction Scattering, Construct Brillouin Zone, solve for band structure with $k \cdot p$ , tight binding, free electron, and nearly free electron theory

It was mentioned in class that a scattering problem would be presented on the final as well as a BZ solving problem.

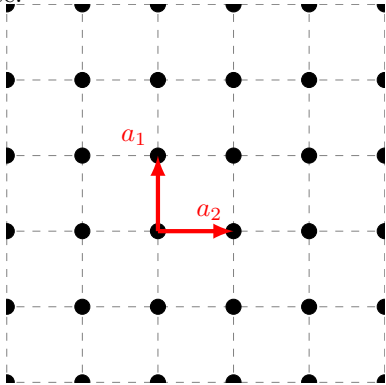
## 1.1 Constructing the BZ

To construct the BZ you must:

### 1.1.1 Draw the reciprocal lattice

#### Simple Cubic

Starting with the lattice for a SC structure shown below (real space) we can construct the reciprocal lattice.



### 1.1.2 Construct the Brillouin Zone

## 2 Understand and solve for the Raman spectroscopy output from a graphene sheet