



# WHAT DO WE LOOK AT

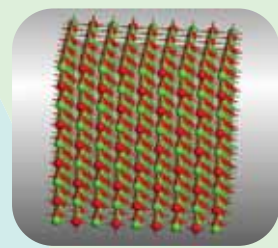
## WHEN WE USE NEUTRON SCATTERING?



### Crystals

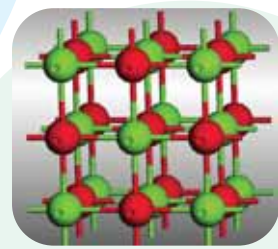
Many useful things are made of crystals. Neutron instruments are made to look closely at crystals such as:

- ✿ Gem stones such as diamonds and rubies
- ✿ Sugar, salt and sand which are all small crystals in powder form
- ✿ Metals and ceramics which consist of tiny crystals in a very fine powder all stuck together to make a solid
- ✿ Silicon chips, teeth, bones, wood and even mud which are all made up of crystals.



### What is a crystal?

Crystals are made up of rows and rows of atoms all stacked up like boxes in a warehouse. There are over 1,200 atoms shown in this drawing of a crystal but real crystals have many, many more atoms.



To draw a crystal, we normally only draw a single box of atoms - in a crystal, the atoms in any one box are exactly the same as the atoms in any other box.

### How do neutrons see atoms?

Neutrons easily fly through atoms - unless they happen to hit the tiny nucleus in the centre of the atom. The nucleus is too hard for the neutron to go through and so it bounces off and flies away in a different direction. The directions in which the neutrons are scattered tell us about the position of the atoms in any particular sample.

