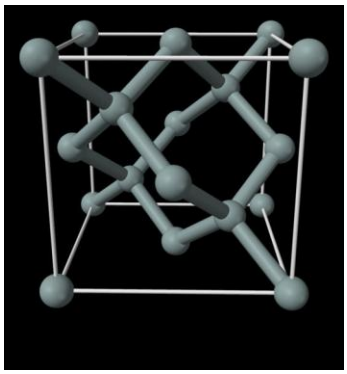
FINDING AVOGADRO'S NUMBER

One modern method to calculate Avogadro's number uses measurements of the size of the smallest building block of a Si crystal, called the unit cell, by scattering X-rays.


The unit cell of Si.

The length of the unit cell (a) is related to the density (d) of Si and it atomic mass (M) by the formula:

$N_A = (8\ M / a^3\ d)$

Scientists at the National Institute of Standards (NIST) in Gaithersburg, MD have made very accurate measurements of these quantities and list the accepted value for Avogadro's constant as $6.02214179 \times 10^{23}\ mol^{-1}$.

WHO WAS AVOGADRO ANYWAY?

The Avogadro constant is named after the early nineteenth century Italian scientist Amedeo Avogadro who is credited with being the first to realize that the volume of a gas is proportional to the number of atoms or molecules it contains.


Amedeo Avogadro

Avogadro never attempted to measure the constant: the numerical value was first estimated by the Austrian physicist Loschmidt in 1865 from the theory of gases. In German-speaking countries, the constant is sometimes referred to as the Loschmidt number.

This information taken in part from http://en.wikipedia.org/wiki/Avogadro%27s_constant.