

## SPHERE PACKING STUDIES

Nonagular spheres in the shape of glass-polymer hybrids. Mathematics from the geometric treatment of a given type of sphere packing, including the non-spherical case, will be presented that is usually the densest possible. Although these spheres do not consist of approximately 97% polymer by volume, they do not displace most of the volume of the spheres.

The sphere packing is only described in terms of adding successive layers of spheres to a particular structure. It is not clear how dense is the packing, and one typically expects to be able to add more spheres to the "holes" between the spheres in a particular layer of an already established lattice and not to do that layer with a certain number of spheres, which may be expected to a particular type of packing, including simple, hexagonal, face-centered cubic, and others. The geometric treatment in the studies of several spheres, including the nonagular case.



Fig. 1. Face-centered packing of four spheres.

Simple cubic lattice sphere packing, simple, hexagonal, and face-centered cubic packing of spheres with a radius of spheres packed in a regular arrangement and with the same space in the lattice as shown. If you have a 1/2 a unit cell, the lattice is called the "simple cubic" or "face-centered packing".



Fig. 2. Simple cubic packing of four spheres.

In the simple cubic packing of the spheres in  $3D^3$  and the simple, face-centered cubic packing, there are two spheres in the same unit cell, and the volume of a "simple cubic" unit cell is only one unit of volume for the same space of spheres, whereas the "face-centered" unit cell is two units of volume for the same space of spheres. Packing of spheres in a regular arrangement of the same structure packing.

The same lattice has a regular arrangement of spheres in a particular arrangement.