Subject: Crystal structure
Posted by mkroeker on Mon, 20 Aug 2012 08:15:11 GMT
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This nerdy object

is a model of the crystal structure of zeolite ZSM-5 created using the published atomic coordinates. (Done with what will be the next version of our free DRAWxtl program - the current one has sporadic problems with normal orientation in its VRML output.)

Customer support warned me that the connections between the (silicate) tetrahedra are bordering on unprintable at this scale, but it came out fine (if a bit brittle).
The whole model is about the size of a package of butter.

Hope you like it - maybe I can someday convince shapeways to create a subcategory for "Chemical Art"

Martin

Subject: Re: Crystal structure
Posted by henryseg on Mon, 20 Aug 2012 14:14:21 GMT
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Very cool!

It looks like you could make the balls larger without altering the connectivity of the structure, which would make it less brittle.

There must be lots of interesting crystal lattice structures out there. I'm surprised I haven't seen much of them on Shapeways so far.

Subject: Re: Crystal structure
Posted by mkroeker on Mon, 01 Oct 2012 15:28:51 GMT
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The next installment of jungle gyms for my silicate playground has arrived. Slightly bigger spheres this time, and indeed the
models are sturdier (and the spheres still do not stand out too much, which was my main concern - in schematic drawings of

these structures, one would usually render only the tetrahedra).

Top left - synthetic zeolite "Linde type A", mass produced as a common component in washing powders to scavenge calcium
(i.e. reduce "water hardness"), bottom right - natural zeolite "sodalite" - sulfur trapped in its cages lends the deep blue color to
lapis lazuli and related gemstones. The other two models are layer silicates (clay minerals) where the silicate tetrahedra form
planar sheets interspersed with layers of magnesium and similar metals bonded to oxygen (depicted as octahedra). Top right,
talc (talcum powder), bottom left, kaolinite, the main ingredient of porcelain.