# Building scheme for LTA

## 1. Periodic Building Unit:

Cubic **LTA** can be built using the sodalite cage (or β-cage) consisting of 24 T atoms (six 4-rings, four 6-rings, three 6-2 units or four 1-4-1 units) shown in Figure 1 as zero-dimensional Periodic Building Unit (PerBU). [Compare this PerBU with the PerBU in **EMT**, **FAU** and **SOD**]
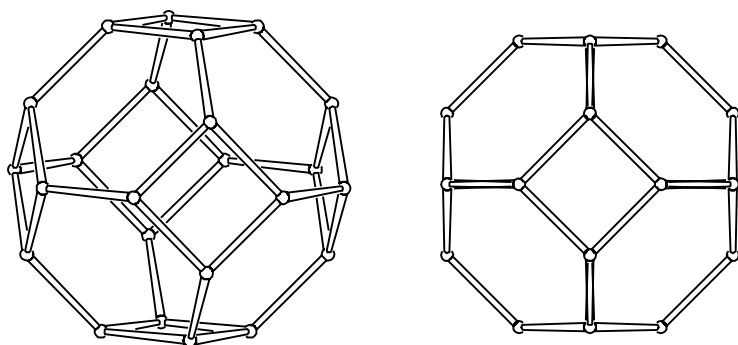


Figure 1. Perspective view (left) and parallel projection (right) of the PerBU (or sodalite cage) down one of the cube axes.

## 2. Connection mode:

The three-dimensional **LTA** framework is obtained when PerBUs, related by pure translations along the cube axes, are linked through double 4-rings as shown in Figure 2 for one cube face. As can be seen from Figure 2, an alternative PerBU of **LTA** can be obtained using D4Rs (see **Alternative description**).
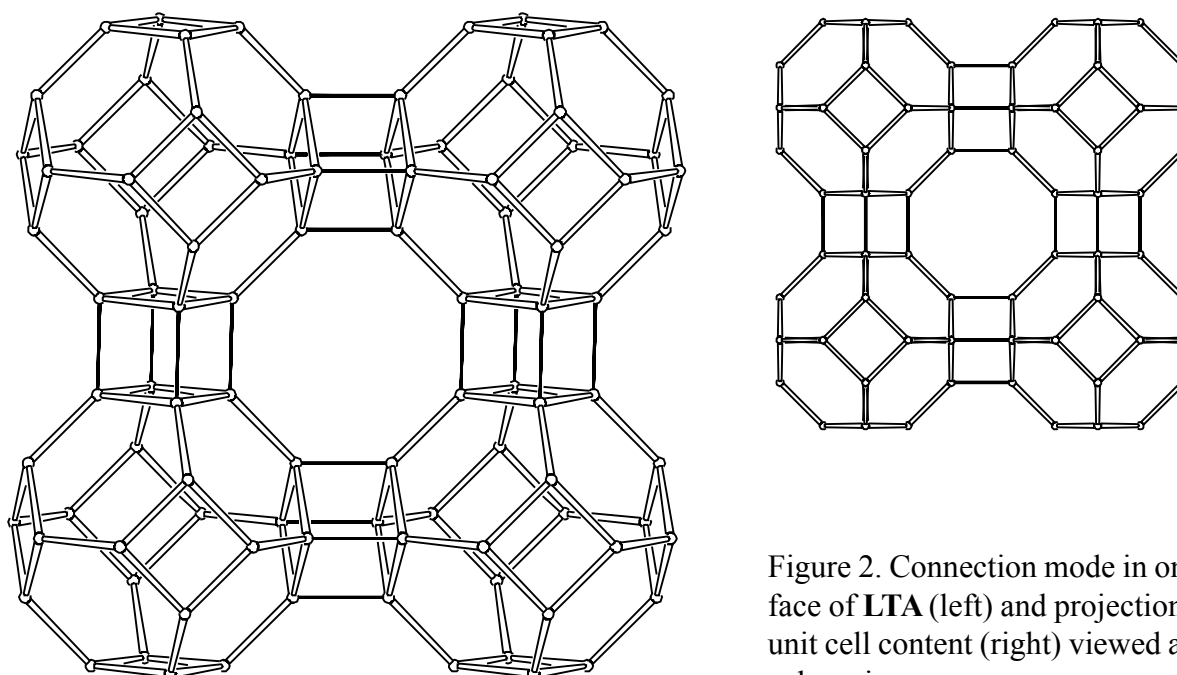


Figure 2. Connection mode in one cubic face of **LTA** (left) and projection of the unit cell content (right) viewed along a cube axis.

**3. Projections of the unit cell content:** See Figure 2.

**4. Channels and/or cages:**

In cubic **LTA** 8-ring channels are parallel to <100>. The channel intersections are equal to the α-cavity depicted in Figure 3 together with its location within the framework. The **pore descriptor** is also added in Figure 3. The linkage of the cavities through common 8-rings is illustrated in Figure 4.
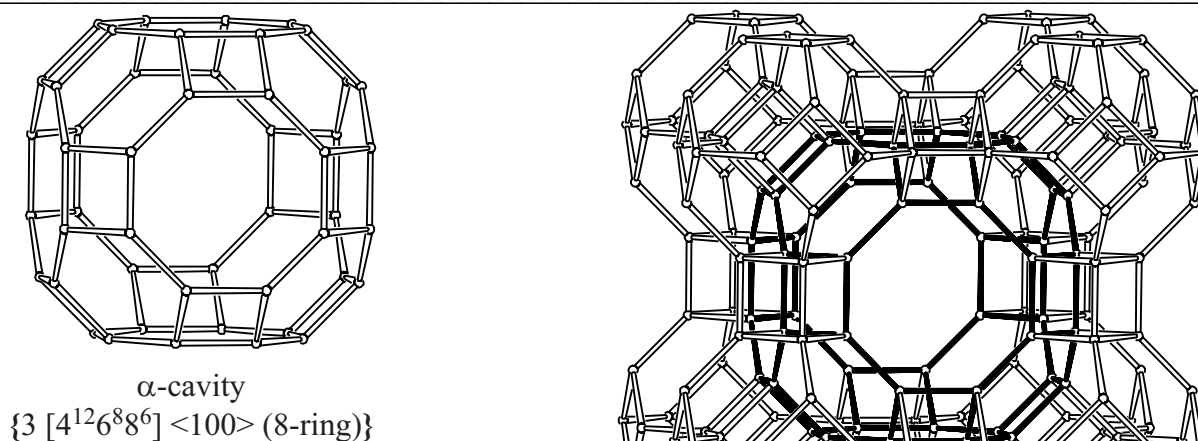
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α-cavity
{3 [$4^{12}6^88^6$] <100> (8-ring)}

Figure 3. Cavity in **LTA** (left) and its location in the framework (right) viewed along a cube axis.
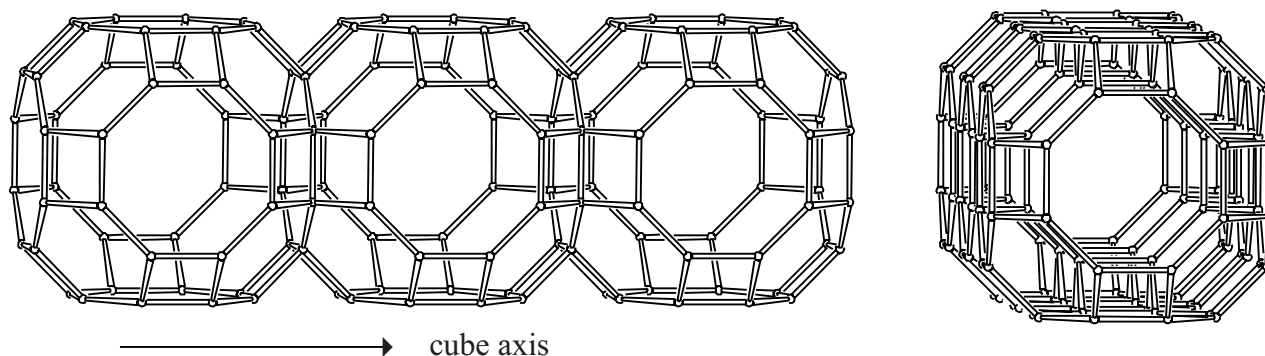


cube axis

Figure 4. Fusion of cavities along a cube axis viewed perpendicular to a cube axis (left) and along that cube axis (right). [**LTA** can also be built from 8-rings as can be seen from the Figure]

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**5. Supplementary information:**

*Other framework types containing (modified) cavities*
Several other framework types can be built using (modified) cavities.
In the **INTRO**-pages links are given to a detailed description of a sub-set of framework types that contain (modified) cavities (choose: **Cages**). There is also a link provided to a summary of the PerBUs used in the building schemes of these framework types (choose: **Appendix**; **Figure 11**).

*Alternative description of **LTA** using (modified) double 4-rings (D4Rs)*
Several framework types, like **LTA**, can be built using (modified) D4Rs (see Figure 2).
In the **INTRO**-pages links are given to a detailed description of a sub-set of framework types that contain (modified) D4Rs (choose: **Double 4-rings**). There is also a link provided to a summary of the PerBUs used in the building schemes of these framework types (choose: **Appendix**; **Figure 5**).