



1. Periodic Building Unit – 2. Connection mode – 3. Parallel projections of the unit cell
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## 1. Periodic Building Unit:

Tetragonal **MSE** can be built using units of 28 T atoms. The T28-unit consists of two mirror related T14-units: three fused 6-rings or seven fused 5-rings (Figure 1 (left)). T28-units, related by 2-fold screw axes along *a* and *b*, are connected through 4-rings into the Periodic Building Unit (PerBU) depicted in Figure 1 (right)). [Compare the building unit and PerBU with those in the **Beta-like framework types**]

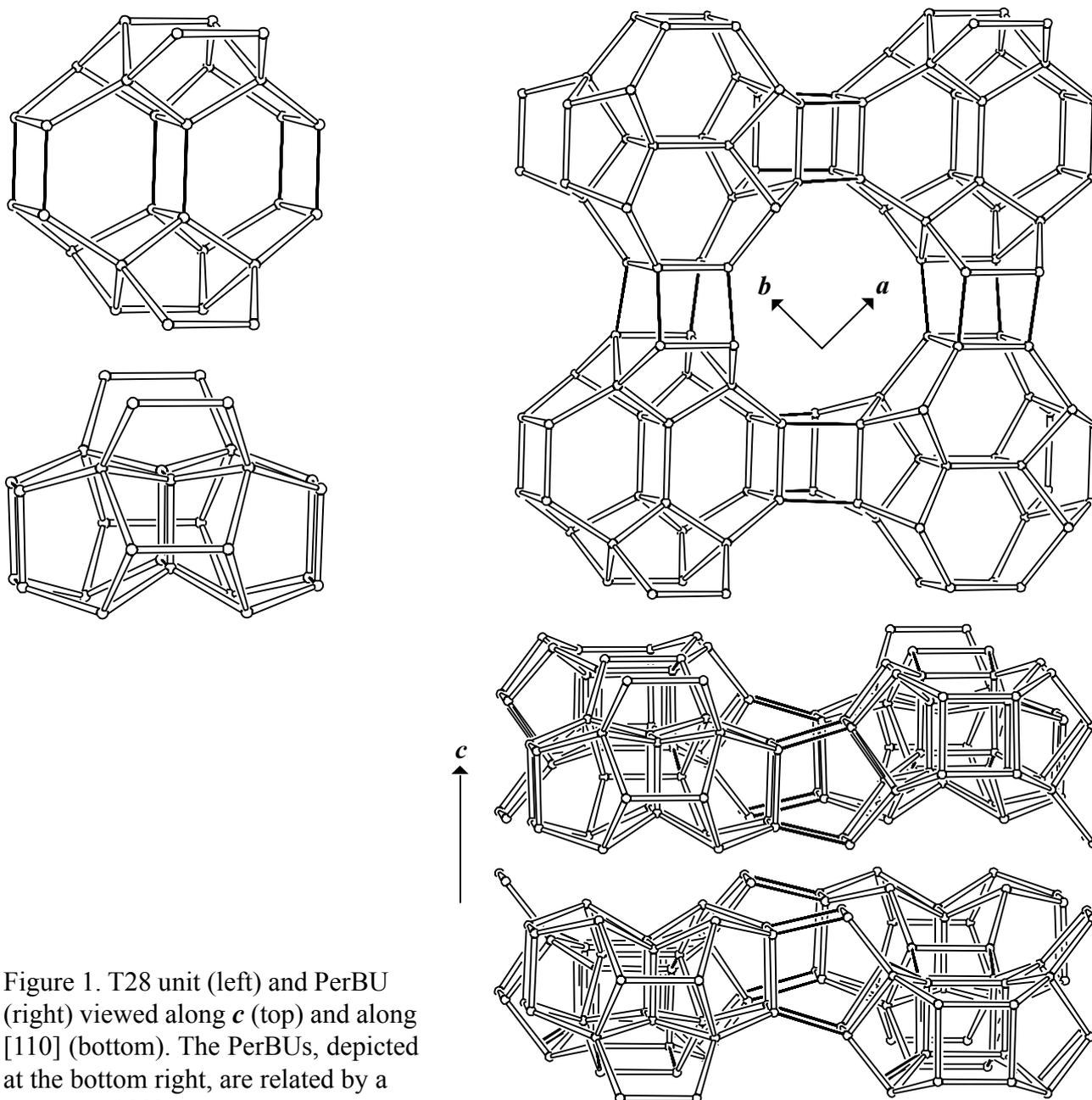


Figure 1. T28 unit (left) and PerBU (right) viewed along *c* (top) and along [110] (bottom). The PerBUs, depicted at the bottom right, are related by a rotation of 90° about *c*.



## 2. Connection mode:

Neighboring PerBUs, related by a rotation of  $90^\circ$  about  $c$ , are connected through double 4-rings: the successive layers are related by a  $4_2$  axis.

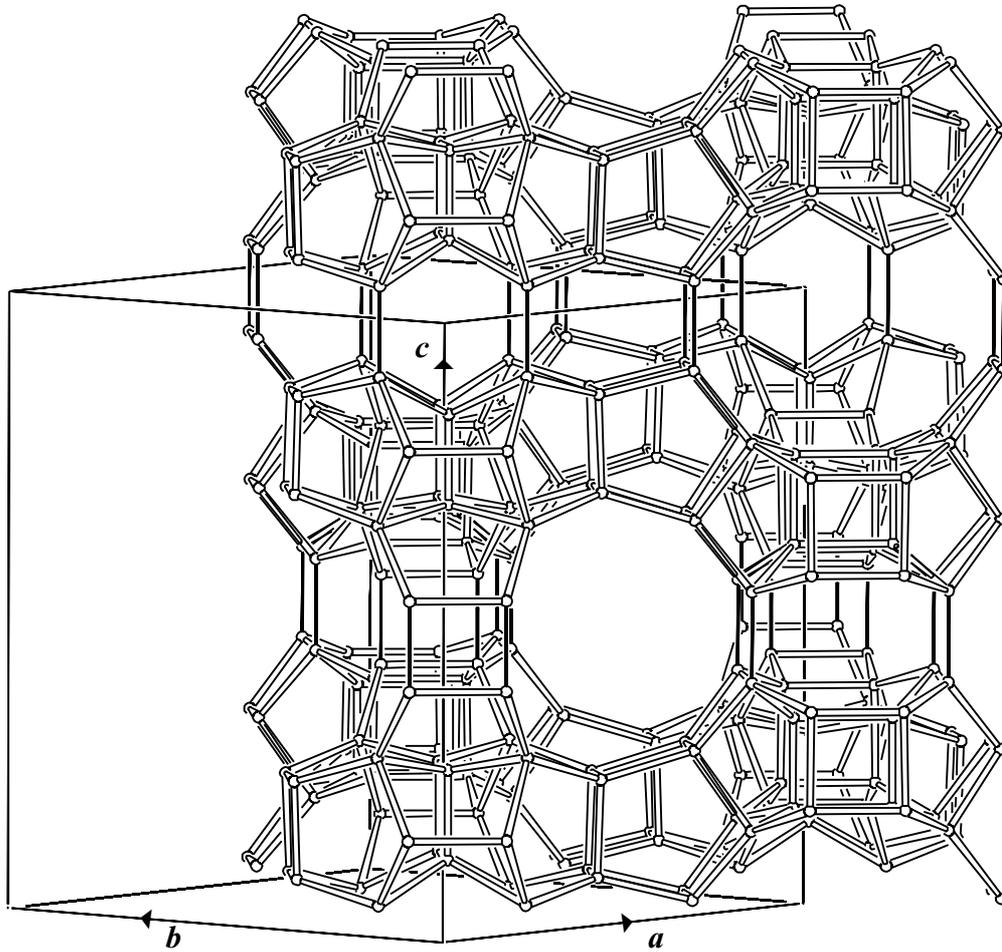


Figure 2. Connection mode (and unit cell content) viewed along  $[110]$ . ▲

## 3. Projections of the unit cell content:

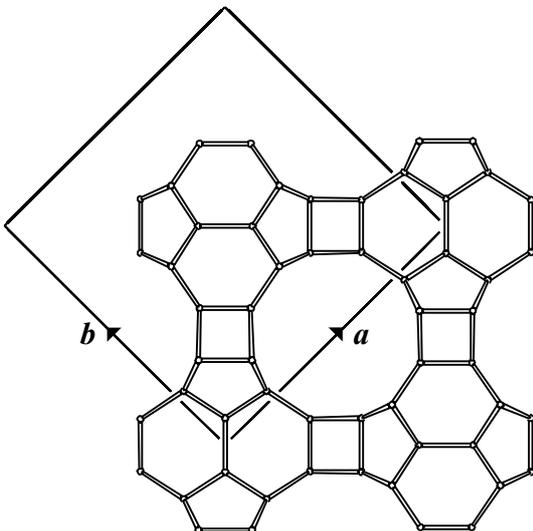


Figure 3. Parallel projection of the unit cell content in MSE viewed along  $c$ . ▲

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

12-Ring channels are parallel to [001]. The 12-ring channels are interconnected through a cavity formed by the intersection of strongly undulating 10-ring channels parallel to  $\langle 100 \rangle$ . The 12-ring channel and the interconnecting cavity are shown in Figure 4. The **pore descriptors** are added. One example of the linkage of the 12-ring channel and cavity is also depicted in Figure 4. Pairs of (interconnecting) 10-ring channels parallel to  $\langle 110 \rangle$  are formed.

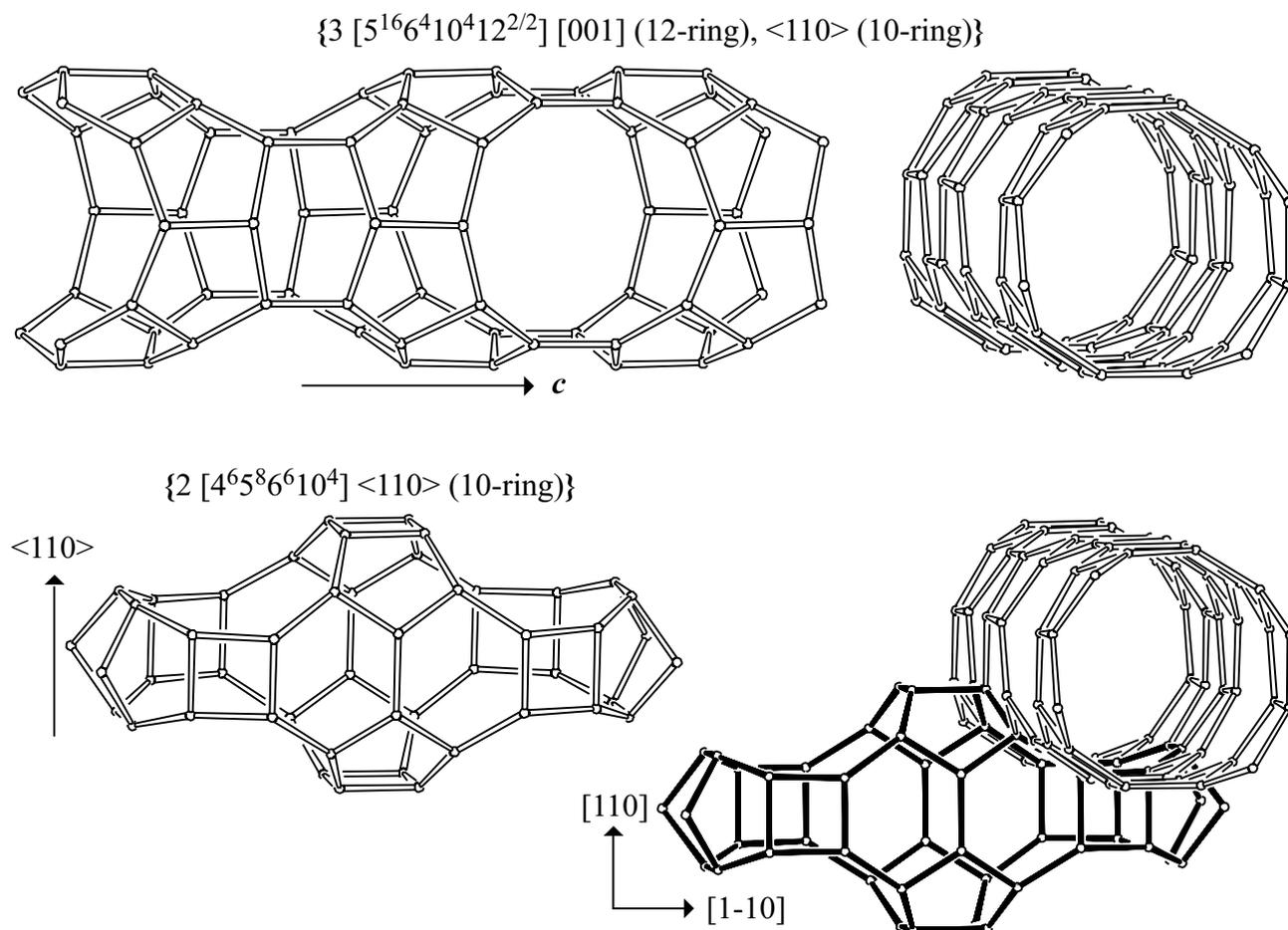


Figure 4. 12-Ring channel (top) viewed along  $\langle 110 \rangle$  (left) and along [001] (right), cavity (bottom left) viewed along [001], and linkage of 12-ring channel and interconnecting cavity viewed along [001] (bottom right). ▲

#### 5. Supplementary information:

##### *Beta-like framework types*

In the **INTRO**-pages links are given to a description of the framework types that contain similar building units (choose: **Beta-family**). There is also a link provided to a summary of the chains and PerBUs used in the building schemes of these framework types (choose: **Appendix; Figure 9**). ▲