Building scheme for MFS

1. Periodic Building Unit – 2. Connection mode – 3. Projections of the unit cell content
4. Channels and/or cages – 5. Supplementary information

1. Periodic Building Unit:

MFS can be built using the saw chain (bold in Figure 1) running parallel to ***a***. The repeat distance along the saw chain is about 7.5 Å. The repeat unit in the chain consists of 3 T atoms. Six saw chains are connected into a one-dimensional Periodic Building Unit (PerBU) depicted in Figure 1. [In **TON** the saw chains are replaced by zigzag chains]. The PerBU can also be built using two 5-1 units and a 6-ring (bold in Figure 1 (right)). [See **Alternative description**]

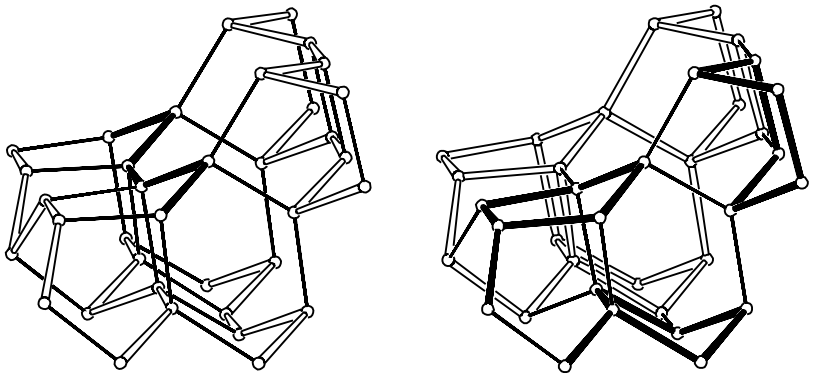


Figure 1. PerBU constructed from six saw chains (left) and from 5-1 units and 6-rings (right) viewed along ***a***.

2. Connection mode:

Neighboring PerBUs, related by a shift of ½(***a*** ± ***b*** ± ***c***), are connected through a system of fused 4-, 5- and 6-rings as shown in Figure 2.

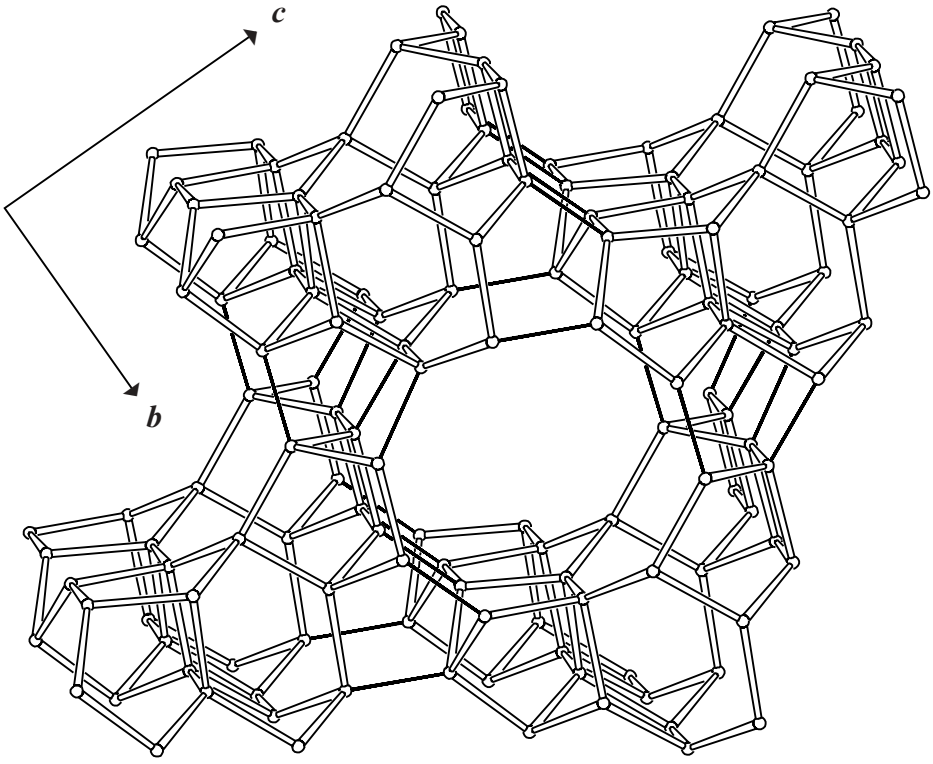


Figure 2. Connection mode in **MFS** viewed along ***a***.

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

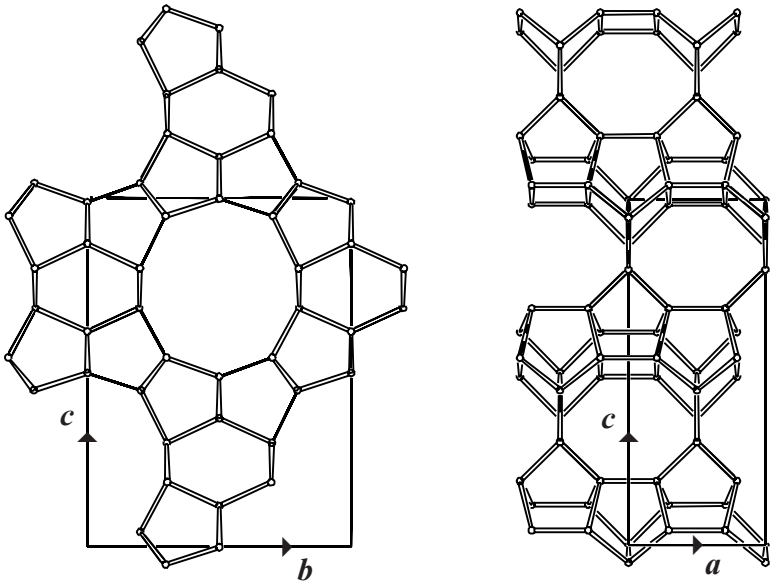
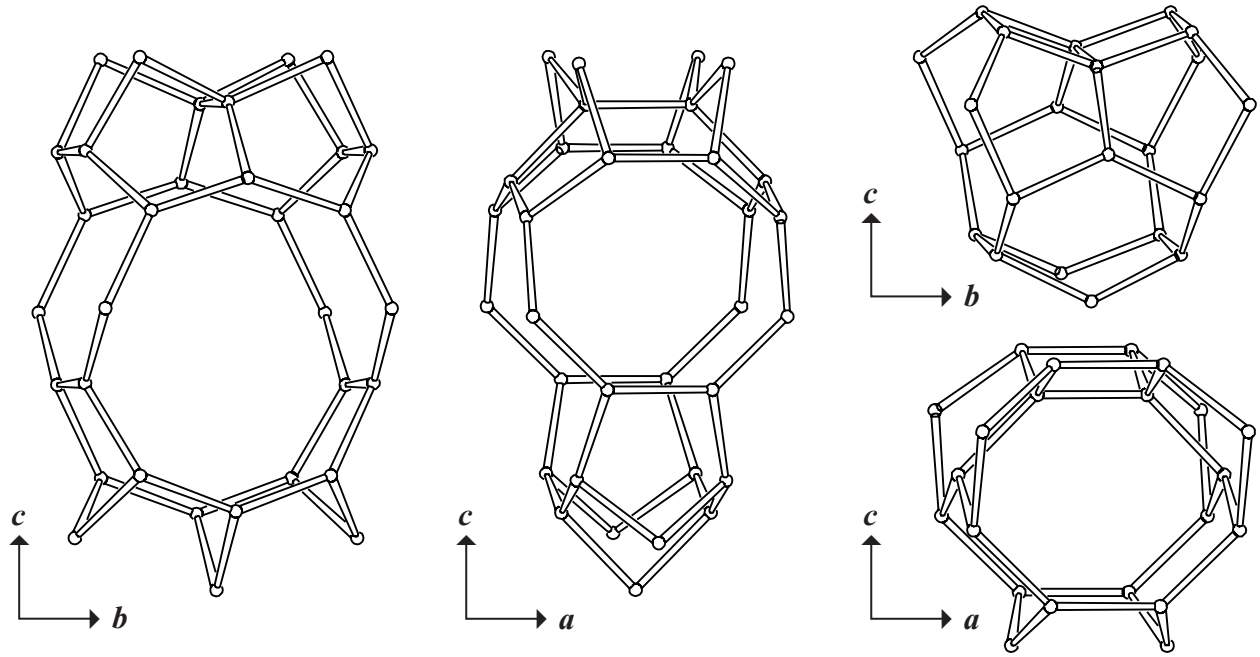


Figure 3. Unit cell content projected along ***a*** (left), and along ***b*** (right).

4. Channels and/or cages:

One-dimensional 10-ring channels are parallel to ***a***, and one-dimensional 8-ring channels are parallel to ***b***. The intersection of channels is shown in Figure 4 together with the cavity that interconnects the 10-ring channels. The **pore descriptor** is added. The linkage of the channel intersection and cavity is illustrated in Figure 5.



{2[$5^6 6^4 8^2 10^2$] [100] (10-ring), [010] (8-ring)}

{1[$4^2 5^4 6^3 8^2$][010] (8-ring)}

Figure 4. Channel intersection viewed along ***a*** (left), and along ***b*** (middle) and interconnecting cavity between 10-ring channels (right) viewed along ***a*** (top), and along ***b*** (bottom).

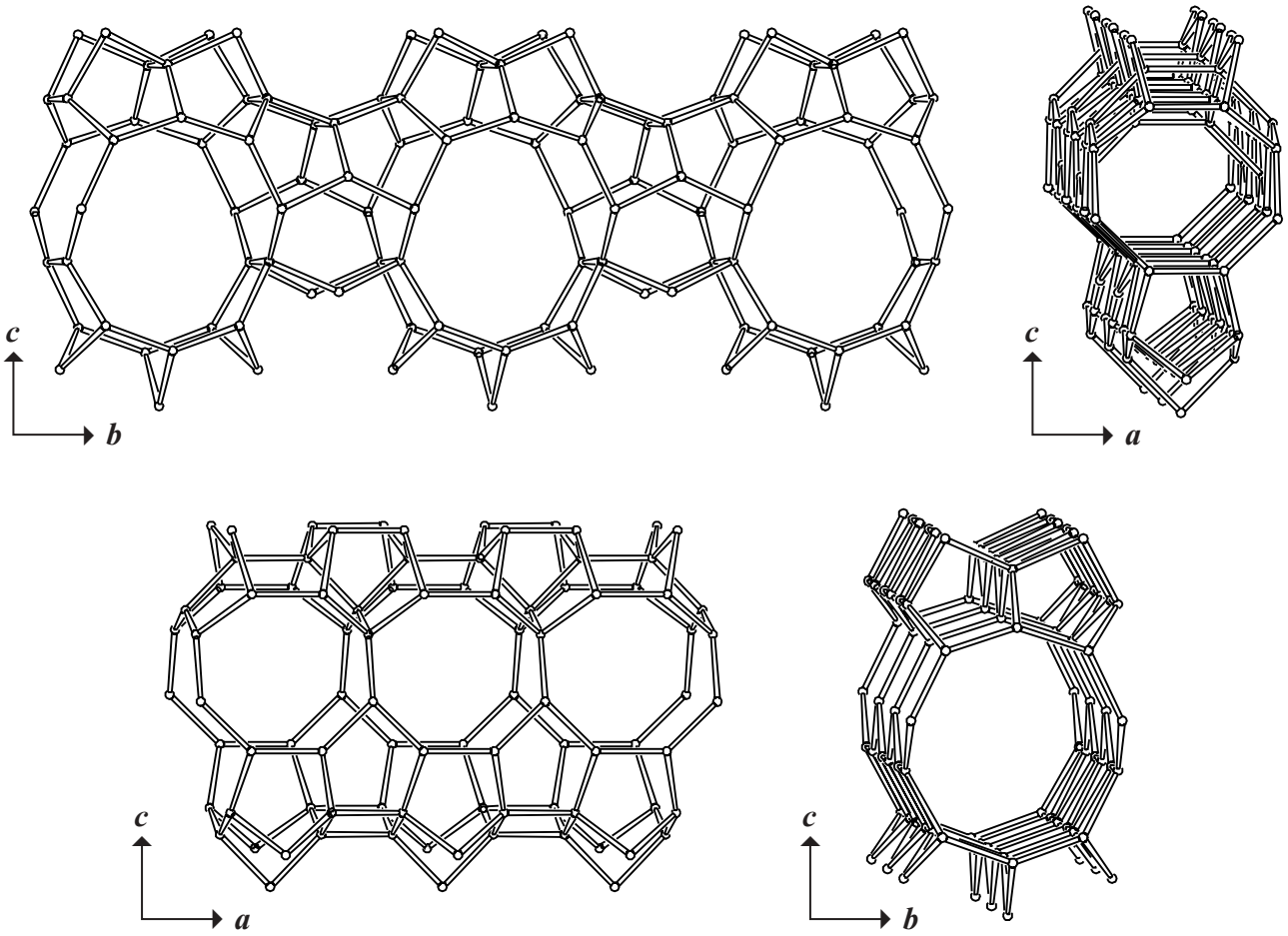


Figure 5. 10-Ring channels, parallel to ***a***, are interconnected along ***b*** through cavities composed of fused 5- and 6-rings that are part of the wall of an 8-ring channel parallel to ***b*** (top). View along ***a*** (left), and along ***b*** (right); fusion of channel intersections along ***a*** (bottom), viewed along ***b*** (left) and along ***a*** (right).

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5. Supplementary information:

Other framework types containing saw chains

In several framework types at least one of the unit cell dimensions is about n*7.5 Å (where n = 1, 2, 3... etc.). In many cases this indicates the presence of saw chains.

In the **INTRO** pages links are given to descriptions of other framework types containing (twisted) saw chains (choose: **Saw chains**). There is also a link provided to a summary of the Periodic Building Units used in the building schemes of these framework types (choose: **Appendix**; **Figure 2**).

Alternative description using (modified) 5-rings

Several framework types, like **MFS**, can be constructed using (modified) 5-rings.

In the **INTRO** pages links are given to detailed descriptions of these framework types (choose: **5-Rings**). There is also a link provided to a summary of the Periodic Building Units used in the building schemes of these framework types (choose: **Appendix**; **Figure 6**).