The KFI/SAV Family

1. The Periodic Building Unit (PerBU) equals the layer shown in Figure 1:

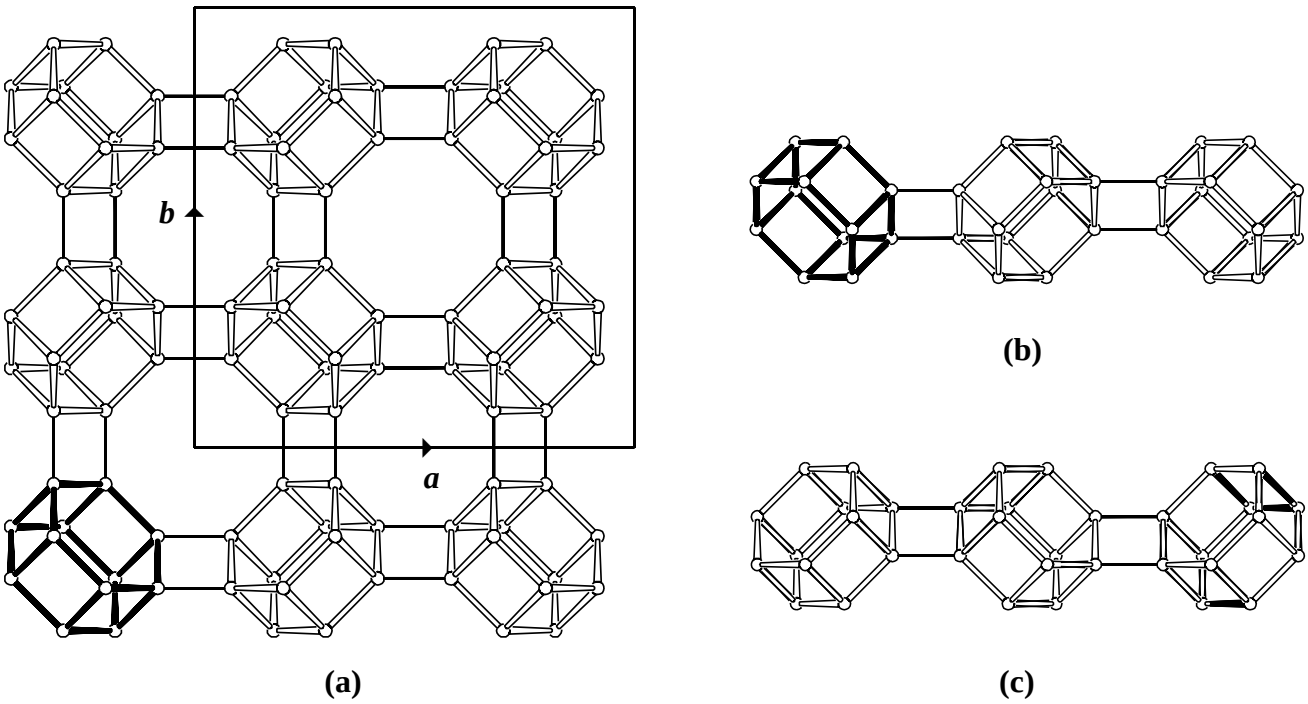

Figure 1: The PerBU of the KFI/SAV family of zeolite frameworks shown parallel to ***c*** (a) and perpendicular to ***c*** (b and c)

The PerBU of the KFI/SAV family of framework types, the tetragonal ***ab*** layer, is composed of double T6-rings (D6R's; Fig.1 in bold). D6R's, related by rotations of 180º about ***a*** and ***b*** (or by mirror planes perpendicular to ***a*** and ***b***) are connected along ***a*** and ***b***, respectively, through T4-rings as shown in Fiure 1. Projections of the PerBU along [001] (Fig.1a), [010] (Fig.1b and 1c) are shown. The layers, depicted in Figure 1b and 1c are identical and related by a 180° rotation about the plane normal, ***c***, or by a mirror operation perpendicular to ***c***. [Compare this ***ab*** layer with the D6R layers in the AEI /CHA and AEI/SAV families].

2. Type of Faulting: 1-dimensional stacking disorder of the PerBU's along ***c***.

3. The Layer Symmetry: the plane space group of the PerBU is P (4) m m.

4. Connectivity Pattern of the PerBU:

Neighbouring PerBU's are connected along ***c*** through T4-rings in two different ways:
(a): neighbouring PerBU's are related by pure translations along ***c***. The resulting connectivity exhibits inversion symmetry (**i**: o) between successive layers.
(b): neighbouring PerBU's are related by a mirror plane perpendicular to ***c*** (or by a rotation of 180º about ***c***). The connectivity now shows mirror symmetry (**m**:|) between successive layers.

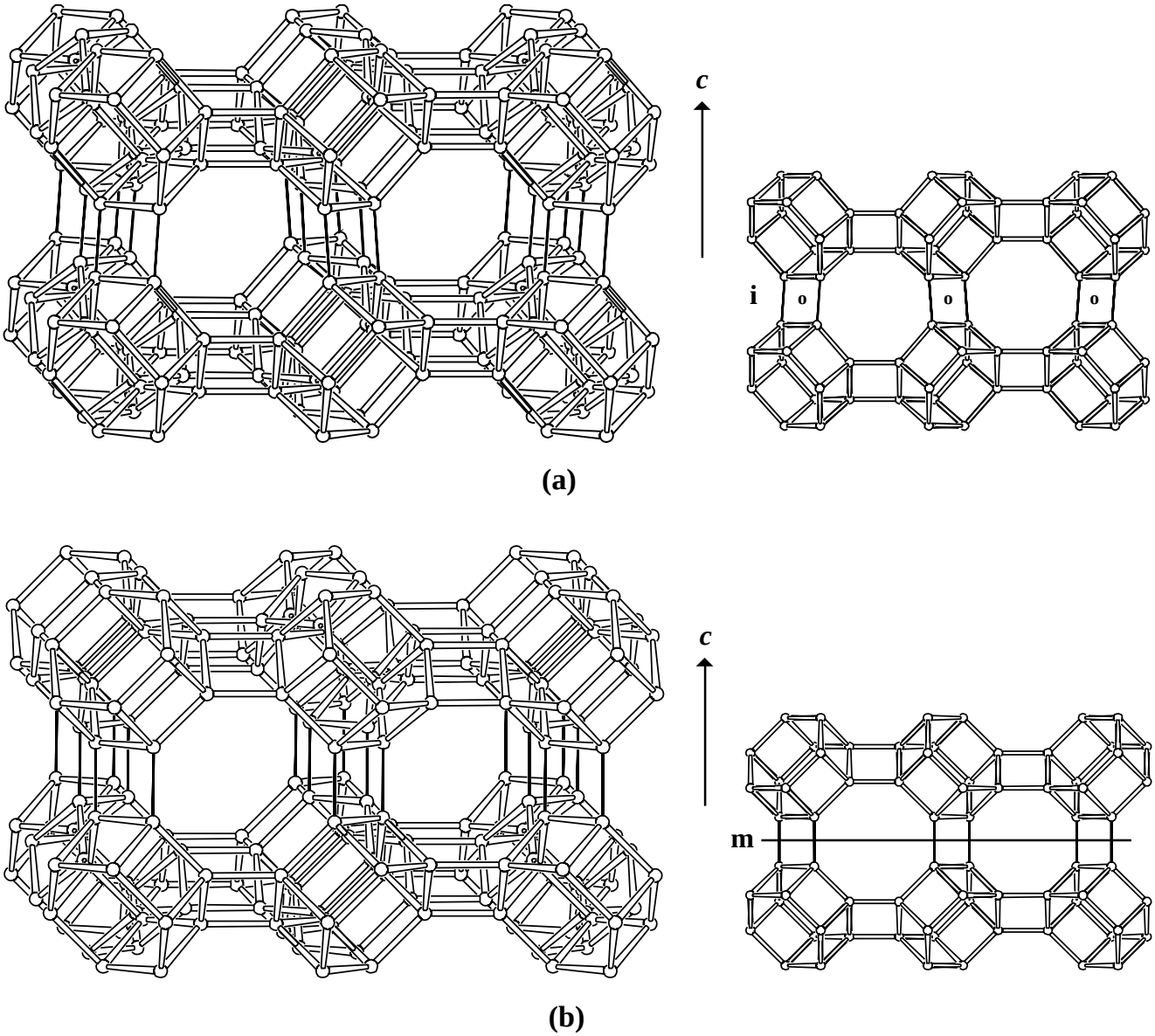

Figure 2: Perspective view (left) and parallel projection (right) along ***b*** of the connection modes **(a)** and **(b)** in the KFI/SAV family of zeolite frameworks

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Once the distribution of the symmetry elements **i** and **m** between the layers stacked along [001] is known, the 3-dimensional stucture is defined.

5. The Simplest Ordered End-Members in the KFI/SAV family are shown in Figure 3:

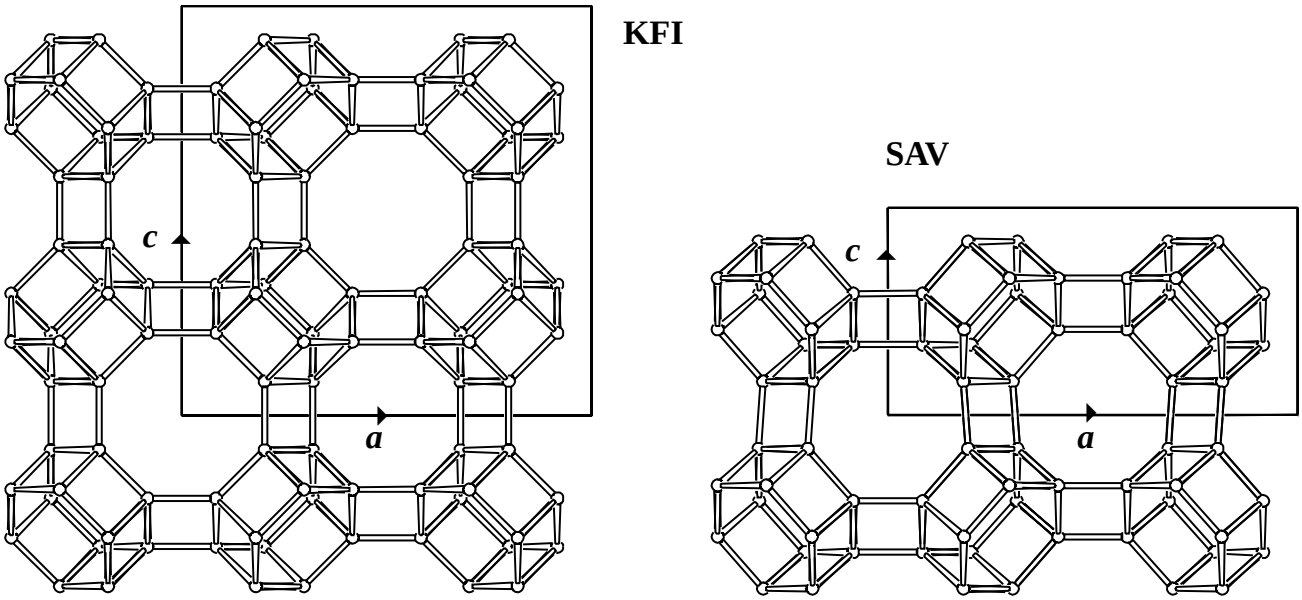

Figure 3: Projection of the unit cell content along ***b*** of the two simplest ordered end-members in the KFI/SAV family: KFI (left) and SAV (right)

Pure KFI (1) and SAV (2) are obtained when neighbouring PerBU's, stacked along ***c***, are exclusively related by **m** and **i**, respectively.

6. Disordered Materials Synthesized and Characterized to Date:

No disordered materials known to date.

7. Supplementary Information

7.1 ***Comparison with the AEI/CHA family*****:**

The PerBU in the AEI/CHA family is composed of D6R's, related by pure translations along the diagonals in the **xy** plane as shown in Figure 4.

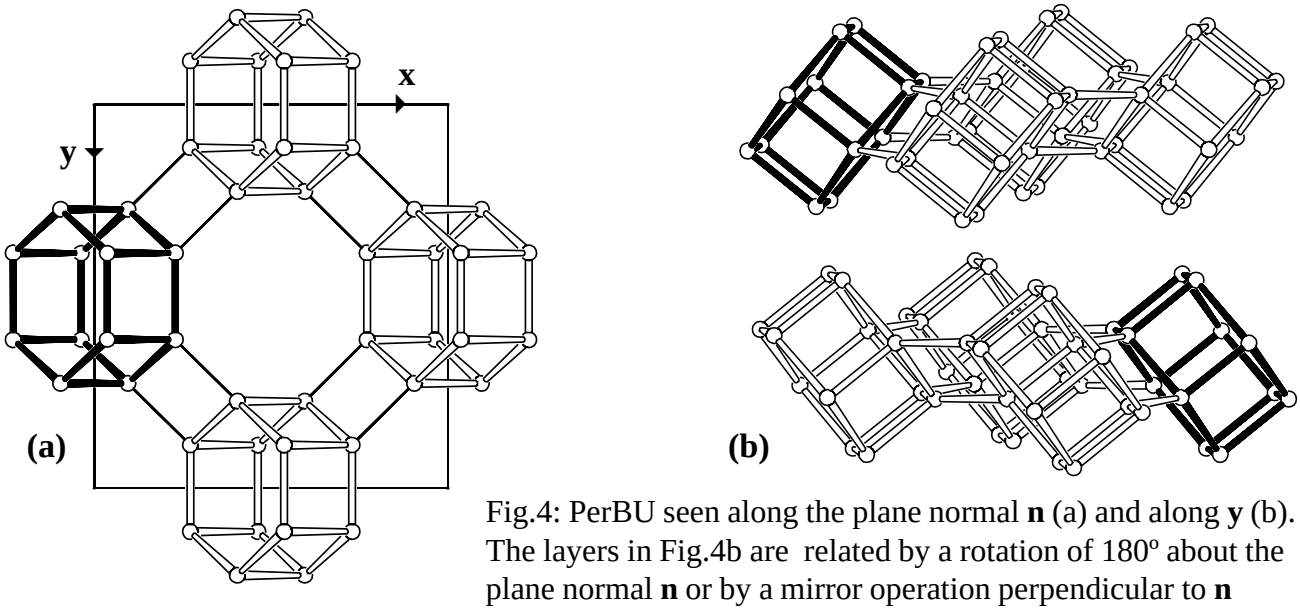

Fig.4: PerBU seen along the plane normal **n** (a) and along **y** (b). The layers in Fig.4b are related by a rotation of 180º about the plane normal **n** or by a mirror operation perpendicular to **n**

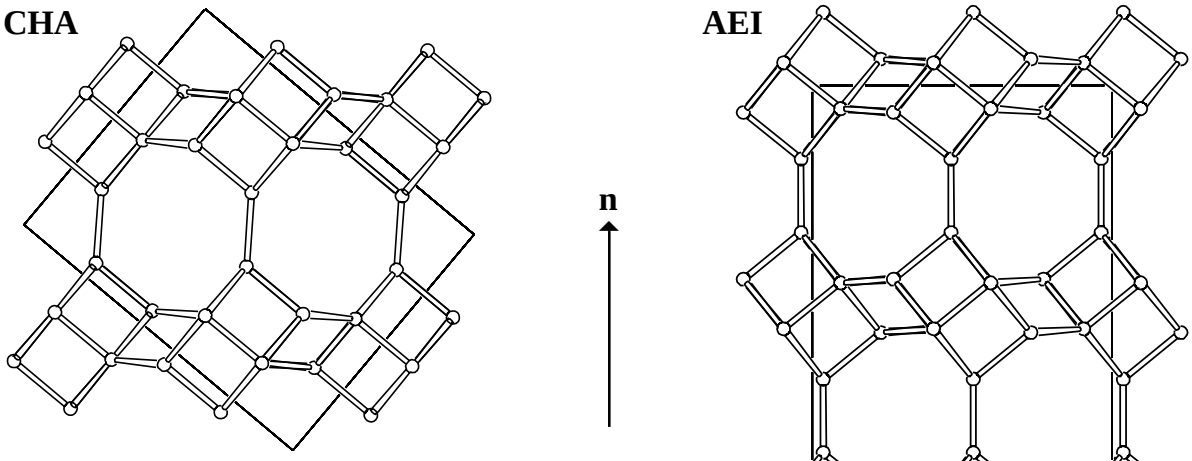

Figure 5: Unit cell content of the simplest ordered end-members in the AEI/CHA family: CHA (left) and AEI (right) seen perpendicular to the plane normal **n** of the PerBU

For more details: see the description of the AEI/CHA family in this 'Catalog'.

7.2 *Comparison with the AEI/SAV family:*

The PerBU in the AEI/SAV family is composed of D6R's, related by rotations of 180º about **x** and by pure translations along **y** as shown in Figure 6.

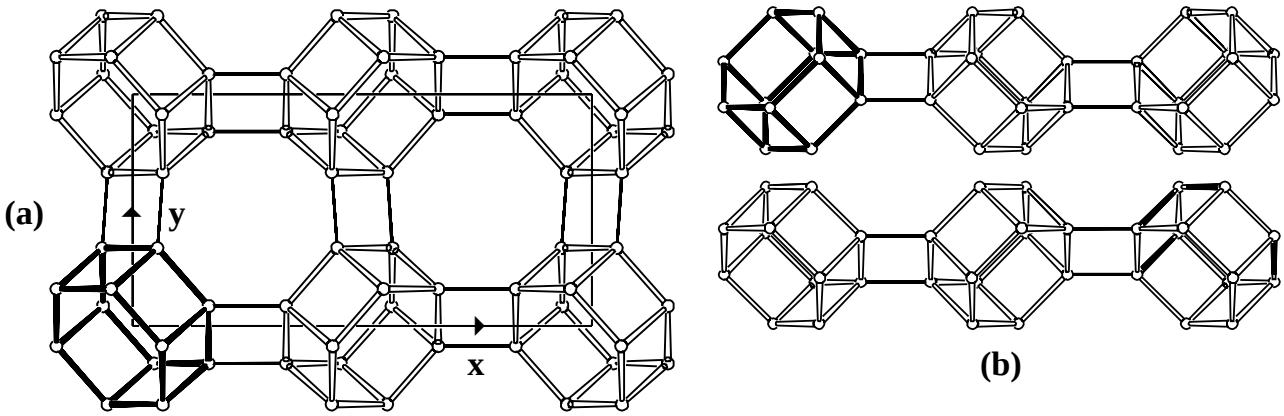

Figure 6: PerBU seen along the plane normal **n** (a) and along **y** (b). The layers in Figure 6b are related by a rotation of 180º about the plane normal **n** or by a mirror operation perpendicular to **n**

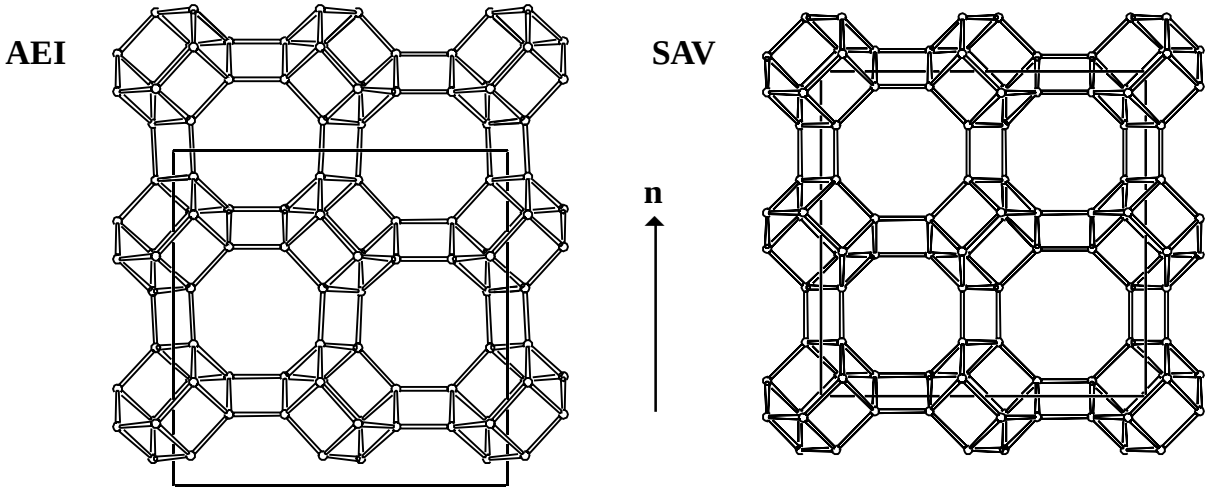

Figure 7: Unit cell content of the simplest ordered end-members in the AEI/SAV family: AEI (left) and SAV (right) seen perpendicular to the plane normal **n** of the PerBU

For more details: see the description of the AEI/SAV family in this 'Catalog'.

8.References

(1) W.M. Meier and G.T. Kokotailo, Z. Kristallogr. **121**, 211 (1965).

(2) P.A. Wright, M.J. Maple, A.M.Z. Slawin, V. Patinec, R.A. Aitken, S. Welsh and P.A. Cox, J. Chem. Soc., Dalton Trans. **2000**, 1243 (2000).