

## Poster Presentation

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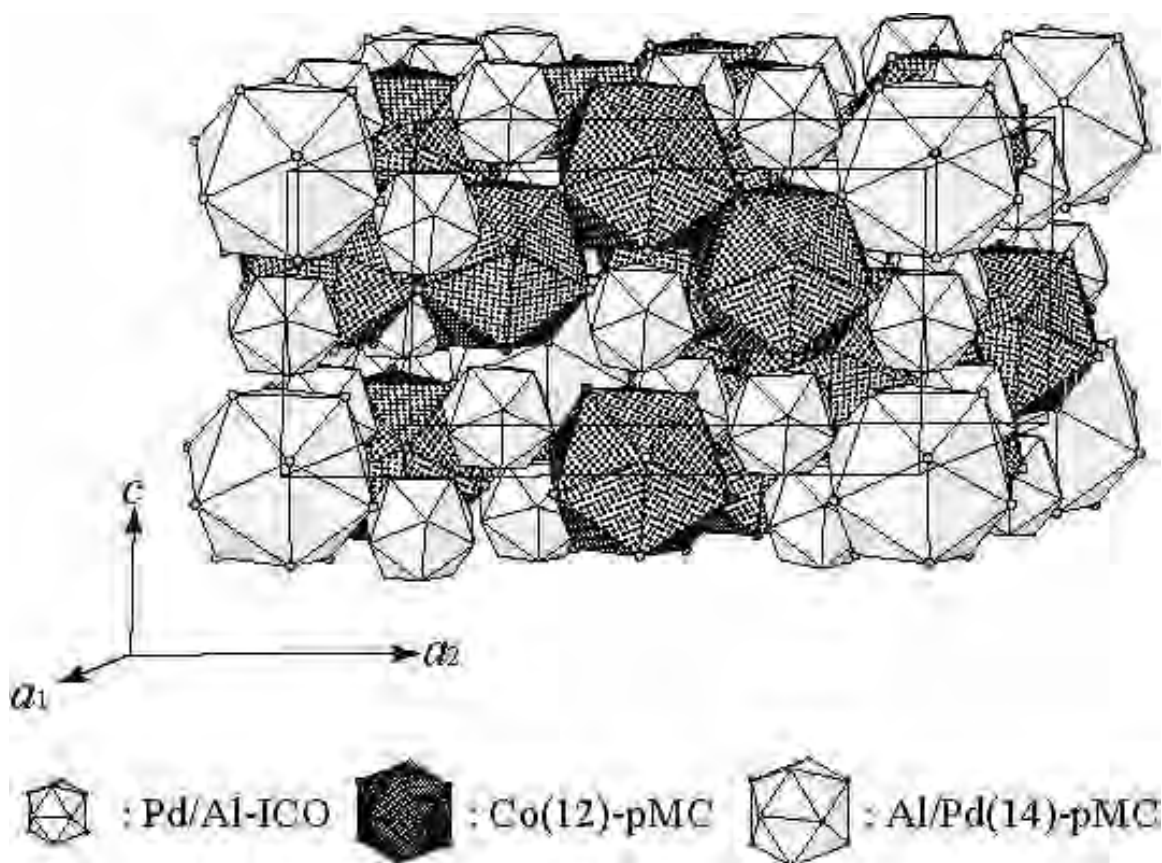
### *Pseudo-Mackay clusters in the Al-Pd-Co System*

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A great number of complicated intermetallic compounds were reported in binary and ternary alloy systems of Al with transition metals. Al–Co–Pd is one of the most interesting alloys, since a variety of crystalline phases associated with quasicrystals has been reported [1]. Among these crystalline phases, the structures of  $\epsilon$ -phases are closely associated with Al<sub>3</sub>Pd, which is an important crystalline approximant for the decagonal phase with a period of 1.6 nm. W-phase is another approximant for the decagonal phase and its structural information is useful for understanding the columnar unit in the decagonal phase with a periodicity of 0.8 nm [2]. On the other hand, some crystalline phases associated with the icosahedral phase were also found in this Al-Pd-Co system. C2-phase, R-phase (R $\bar{3}$ : a = 2.91 nm, c = 1.32 nm) and F-phase (Pa $\bar{3}$ : a = 2.44 nm) are classified into this category. In particular, the structures of R-phase and F-phase consist of a variety of pseudo-Mackay clusters similar to those found in 1/1-AlCuRu and the trigonal  $\chi$ -AlPdRe. As an example, the structure of R-phase shows two types of pMCs. These pMCs can be ranked by their atomic arrangements of the first shells, nevertheless every outer shell is a harmony of an Al-icosidodecahedron and a Co/Pd-icosahedron. These pMCs interpenetrate each other by sharing edges of Co/Pd-icosahedra and the interstitial space is subsequently filled by the smaller Al-icosahedra around Pd/Al sites [3]. The characteristic structural motifs for R-phase and F-phase readily suggest the importance of pMC as a fundamental structural unit for icosahedral quasicrystals.

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