**MS29-1-6 Fractal transitions of selenourea**
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**Abstract**
Fractal phase transitions have been found in the crystal lattices of selenourea, $SeC(NH_2)_2$, At room temperature, selenourea crystallizes in phase α, of the enantiomorphic space-group type $P3_1$ and the unit cell containing nine symmetry-independent molecules, i.e. the Z' number equal to 9 [1-3]. The lattice of phase α is similarity-related to that of a 3-fold smaller unit-cell (Z'=3), which in turn is likewise related to another 3-fold smaller unit-cell (Z'=1), all of the same space-group type. Indeed, at 374 K, phase α transforms to phase γ, for which the space-group type $P3_1$ is retained, and the Z' number is reduced to 3. The same similarity fractal rule relating phases α and γ, also applies to the lattice of a hypothetical phase δ (Z'=1). Analogous fractal rules like this between the α-γ-δ phases of selenourea have been identified also for other compounds described in the literature. The unit-cell dimensions in crystals naturally limit the down-scaling of all natural fractals. The temperature-induced fractal transitions described for selenourea α-γ-δ phases, contrast with the high-pressure transition at 0.21 GPa to phase β, which is centrosymmetric and for which the aggregation of molecules is significantly different [1]. Relations between crystallographic macroscopic and microscopic fractals will be discussed.

**References**
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