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Synthesis, Structure and Thermal Behaviour of a Strontium-Pimelate Framework. Khadidja Aliouane^a, Achoura Guehria-Laidoudi^a, Slimane Dahaoui^b, Claude Lecomte^b. ^a*Laboratoire de Cristallographie-Thermodynamique, Faculté de Chimie, USTHB, BP 32 El-alia, Bab Ezzouar 16111, Alger.* ^b*CRM²-UPRESA 7036, Université Henri Poincaré BP 239, 54506 Vandoeuvre-lès-Nancy, France.*

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New generations of metal-organic coordination polymers have emerged in last years, enhancing the field of supramolecular chemistry. These compounds, based on building unit concept, are constructed from connectors assuming a great coordination number and linkers offering versatile coordination modes. With this purpose, and extending our previous work, we present the synthesis, structure and thermal behaviour of a non-templated strontium pimelate consisting of isolated SrO₈ polyhedra bridged in layers.

Single crystals were obtained by soft chemical process. At the pH value adjusted in the gel diffusion technique, pimelic acid deprotonates partially, bringing out the supramolecular bonding feature [HO₂C-(CH₂)₅-CO₂]. The hybrid polymeric structure, belonging to space group P4₂/m^b exhibits inorganic layers parallel to (001). Organic chains formed by the carbon backbone of the ligands run roughly along c axis. In the extended network, two end carboxylic groups are in anti-parallel orientations. The two-dimensional substructure containing Sr atoms forms a pseudo-eight-sided grid network with empty channels. There is no M-O-M infinite linkage which is the typical feature appearing in the most polycarboxylate complexes and particularly in lanthanum [1] and cerium [2] pimelates. This new compound is structurally closely related to the barium-glutarate previously studied [3], presenting the same space group and architecture. It seems that c parameter is modified according to the longest spacer (7 C atoms instead of 5). The thermal studies indicate a high stability if compared to other earth-alkaline polymers. However, unlike the lanthanum and the cerium pimelates which can be affiliated to the third generation of coordination polymers [4], the total weight loss doesn't exceed the calculated one corresponding to SrCO₃ as residue. The a and c unit cell parameters evolution, studied over the temperature range (100-293)K shows a monotonic variation. The crystal structure, investigated at room temperature, is completely different.

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The Crystal Structures of Polymorphs of Strontium Ranelate. Kenny Stahl^a, Christian G. Hartmann^a, Carsten B. Prag^a, Søren R. Sørensen^a, Anders C. Raffalt^a, Stephan Christgau^a, Jens E.T. Andersen^a. ^a*Chemistry Department, Technical University of Denmark, Lyngby, Denmark.*

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Recent preclinical and clinical investigations have revealed that Sr²⁺ reduces bone re-sorption while at the same time it provides a stimulation of new bone formation (Marie et al., 2001). This combined action on bone metabolism sets Sr²⁺ unique as compared to existing osteoporosis therapies and has led to a growing interest in Sr²⁺ salts with different organic anions. Several organic strontium salts has recently been synthesized and structurally characterized by single-crystal methods [2,3,4,5]. Strontium ranelate (5-[bis(carboxymethyl) amino]-3-carboxymethyl- 4-cyano-2-thiophenecarboxylate), is one promising pharmaceutical compound for treating osteoporosis marketed as Protelos[®] by Servier[®] [6]. The crystal structures of strontium ranelate nonahydrate and heptahydrate has now been determined by single-crystal diffraction (P-1, a=8.3585(5), b=12.6474(8), c=12.3865(8) Å, α=109.880(1), β=105.321(1), γ=97.148(1)° and P-1, a=8.3047(9), b=11.528(1), c=12.431(1) Å, α=112.939, β=101.971, γ=90.220(2)°, respectively). In situ variable temperature powder diffraction confirms the reversible transformation between the nona- and heptahydrates and a third phase was identified at 382 K (P-1, a=8.2372(4), b=11.3904(5), c=11.3978(9) Å, α=117.613(3), β=92.097(3), γ=94.297(3)°). The structures are built from edge-sharing of seven-, eight- and nine-coordinated Sr-polyhedra forming hollow layers perpendicular to (0-11) connected by ranelate ions. The water is partly coordinated to strontium and partly in the channels formed along the a-axis. The zeolitic nature of the latter water explains the easy transformations between the different forms of strontium ranelate.

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Deformation Defects in Solids: from Dislocations to Plasticity Localization Waves. Lev Zuev^a, Svetlana Barannikova^a. ^a*Institute of Strength Physics and Materials Science, Tomsk, Russia.*

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Conventional dislocation approaches used by addressing plastic flow are re-considered in the light of a new wave concept of deformation macro-localization [1]. Holographic investigations were performed for single- and