Mechanoformation of Ammonium Perchlorate–Potassium Perchlorate Solid Solutions. V. R. Pai Verneker,* D. Seetharamacharyulu, and R. M. Mallya, Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore-560 012, India. Ammonium perchlorate–potassium perchlorate mixtures on pelletization form a series of homogeneous solid solutions as manifested by X-ray powder diffractograms. Scanning electron microscopic studies throw light on the mechanism of the solid solution formation. Solid solutions of ammonium perchlorate–potassium perchlorate have also been obtained by the modified cocrystallization technique. The thermal and combustion behavior of the solid solutions have also been studied using the DTA technique and the Crawford strand burner.

Les oxydes $La_{4-2x}Ba_{2+2x}Cu_{2-x}O_{10-2x}$*: Une structure inédite constituée de groupements* CuO_4 *carrés plans isolés.* C. Michel,* L. Er-Rakho, and B. Raveau, Laboratoire de Cristallographie et Chimie du Solide, Universite de Caen, 14032 Caen Cedex, France. A new phase, $La_{4-2x}Ba_{2+2x}Cu_{2-x}O_{10-2x}$ has been isolated for $0.15 \leq x \leq 0.25$. It crystallizes in the tetragonal system, with a and c parameters close to 6.86 and 5.87 Å, respectively. The structural study was made from powder data (space group: $P4/mbm$) for $x = 0.20$ ($a = 6.862(1)$ Å, $c = 5.87(1)$ Å), using Patterson and Fourier functions. It was shown that the framework of this oxide is principally built up from edge- and face-sharing AO_8 and AO_{10} polyhedra, while the square planar CuO_4 groups are isolated.

The Cooperative Jahn–Teller Distorted Structure of $RbCuCl_3$. W. J. Crama, Billiton Research B.V., P.O. Box 38, 6800 LH Arnhem, The Netherlands. As a function of temperature, $RbCuCl_3$ appears in three different structures types, all with a slight deviation from the $CsMgCl_3$ or hexagonal perovskite ($2L$) structure. Above 339 K it crystallizes with space group $P6_3/mmc$ (α-$RbCuCl_3$), probably isostructural to α-$CsCrCl_3$. Between 339 and 262 K it has space group $Pcan$ (β-$RbCuCl_3$), isostructural to β-$CsCrI_3$ and below 262 K space group $C2$ (γ-$RbCuCl_3$), isostructural to γ-$RbCrCl_3$. The β and γ phases consist of chains of face-sharing $CuCl_6$ octahedra which are elongated along a principal axis (pseudo D_{4h} symmetry) as a consequence of the $E \times \epsilon$ Jahn–Teller effect.

Formation of High Oxide Ion Conductive Phases in the Sintered Oxides of the System Bi_2O_3–Ln_2O_3 ($Ln = La$–Yb). H. Iwahara,* T. Esaka, T. Sato, and T. Takahashi, Department of Environmental Chemistry and Technology, Faculty of Engineering, Tottori University, Minami 4-101, Koyama-cho, Tottori 680, Japan. The electrical conduction in various phases of the system Bi_2O_3–Ln_2O_3 (Ln = La, Nd, Sm, Dy, Er, or Yb) was investigated by measuring ac conductivity and the emf of oxygen gas concentration cell. High oxide ion conduction was observed in the rhombohedral and face-centered cubic (fcc) phase in these systems. The fcc phase could be stabilized over a wide range of temperature by adding a certain amount of Ln_2O_3. In these cases, the larger the atomic number of Ln, the lower the content of Ln_2O_3 required to form the fcc solid solution, except in the case of Yb_2O_3. The oxide ion conductivity of this phase decreased with increasing content of Ln_2O_3. Maximum conductivity was obtained at the lower limit of the fcc solid solution formation range in each system, which was more than one order of magnitude higher than those of conventional stabilized zirconias. Lattice parameters of the fcc phase were calculated from the X-ray diffraction patterns. The relationship between the oxide ion conductivity and the lattice parameter was also discussed.

Etude comparative des composes TiX_2 (X = *S, Se, Te*)*: Structures de* $TiTe_2$ *et TiSeTe.* Y. Arnaud and M. Chevreton*, Laboratoire d'Etude des Matériaux, (ERA 602) Bt303, INSA 20, ave. Albert-Einstein, 69621 Villeurbanne Cédex, France. The evolution of crystal structure and chemical bond characteristics in the series of isotypical compounds TiX_2, with X = S, Se, Te, is studied. The structure determination of $TiTe_2$ and TiSeTe confirms the existence of an increasing trigonal C_{3v} distortion of metal sites when the chalcogen electronegativity decreases. The ESCA study shows that this distortion is associated with increase of the covalent or metallic character of the bonds. The structural and spectroscopic differences appearing from TiS_2 to $TiSe_2$ can be interpreted by an orbital delocalization in $TiSe_2$ and $TiTe_2$ which would explain the semimetallic behavior of these compounds.

On the Influence of Gaseous Ammonia on Uranyl Formate. B. Claudel,* J. P. Puaux, D. Rehorek, and H. Sautereau, Laboratoire de Cinetique et Genie Chimiques, (ERA 602) Bt 303, INSA, 20, ave. Albert-Einstein, 69621 Villeurbanne Cédex, France. The interaction of gaseous ammonia on anhydrous uranyl formate has been studied. Depending on the temperature, three different compounds can be obtained: $UO_2(HCOO)_2 \cdot 2NH_3$ (A), $UO_3 \cdot 2HCONH_2 \cdot H_2O$ (B), $UO_3 \cdot HCONH_2 \cdot H_2O$ (C). A is unstable at room temperature, and transforms into B, which leads to C