o.m9.o1 **From 2D to 3D oxides: Layered Double Hydroxides**. V. Rives, *Departamento de Química Inorgánica, Universidad de Salamanca, Salamanca, Spain (e-mail: vrives@gugu.usal.es)*
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The so-called "Layered Double Hydroxides" (LDH) or "anionic clays", can be considered the counterpart of the common, well known cationic clays; they are constituted by positively charged (by M(II)/M(III) substitution) brucite-like layers, balanced by interlayer anions[1]. The nature of the layer cations can be chosen from a wide range of metals (main groups or transition series), and also a wide selection of interlayer anions can be considered (halides, oxoanions, oxometalates, anionic coordination compounds, organic anions, etc.)[2,3]. A brief report on the preparation and characterization of selected examples will be presented.

On calcination, these solids lead to formation of mixed oxides, usually with large specific surface area development, and constituted by homogeneously dispersed oxides, which precise nature and crystalline structure depends on the cations originally existing in the LDH precursor and on the calcination conditions. It has been also found that location of the cations in the starting LDH (in the layers on in the interlayer) also controlls the nature of the final solids. Examples will be given on these properties.

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[2] Rives V. and Ulibarri M. A. "Layered double hydroxides (LDH) intercalated with metal coordination compounds and oxometalates", Coord. Chem. Rev., (1999), 181: 61-120.
[3] Newman S. P. and Jones W. "Synthesis, characterization and applications of layered double hydroxides containing organic guests", New J. Chem., (1998) 105-115.

o.m9.o2 **Potential of industrial development of products based on high temperature superconducting materials.** M. Decroux, L. Antognazza, *Département de physique de la Matière Condensée, Université de Genève, 24 quai Ernest-Ansermet, 1211 Genève 4, Switzerland*
Keywords: superconductivity, perovskite.

During the last decades, the development of new industrial products has made big profits from the possibility to use new materials, a need which will even increase in the future. For instance, the semiconducting technology still need novel materials to get new devices (sensors, actuators or transducers). In many cases, there is a demand for a complex composite made of different materials with selected properties grown epitaxially on top each other, with interfaces as perfect as possible. Such constraints are more easily satisfied if the materials are issued from the same family of compounds.

The discovery of the high temperature superconducting perovskite as prompted a lot of effort in the material sciences development of a class of compounds where a large choice of physical properties can be found (ferroelectricity, piezoelectricity, semiconductivity, superconductivity, . . .). Superconducting applications require generally large critical current densities J_c (maximum current density without dissipation) as for instance for filters in telecommunication or resistive current limiter for power plant protection. To achieve large Jc (above 10^{10}A/m^2) materials with almost no grain boundaries have to be synthesised. They are usually epitaxial thin films of $Y_1Ba_2Cu_3O_7$ (YBCO) grown onto single crystal substrate. Presently wafers up to 8 inches of epitaxial YBCO on sapphire are commercially available. Other applications like cables or wire for magnet do not need a material of the quality of epitaxial films. In polycrystalline materials, however, the critical current densities can be several order of magnitude smaller than in epitaxial thin films. Appropriate processes have been developed in order to get a good texturing and then get appreciable critical current densities. These processes are generally more efficient with materials having a large anisotropy like $Bi_2Sr_2Ca_1Cu_2O_8$. In this presentation we will present the industrial development of some of the applications based on thin films and polycrystalline materials and discussed what are the profit and also the limitation that the material bring.

However, the interest of this class of materials is not only restricted to superconducting applications but also on the development of other devices made of multilayers of materials with selected properties. The possibility to grow epitaxially some of these perovskite (ferroelectric PZT $(Pb_{1-x}Zr_x)TiO_3$, superconducting or conducting YBCO) onto silicon substrate open up interesting opportunities to developed new devices. Some of this potential application will be also review to conclude this presentation.