# PROJECT FACTSHEET

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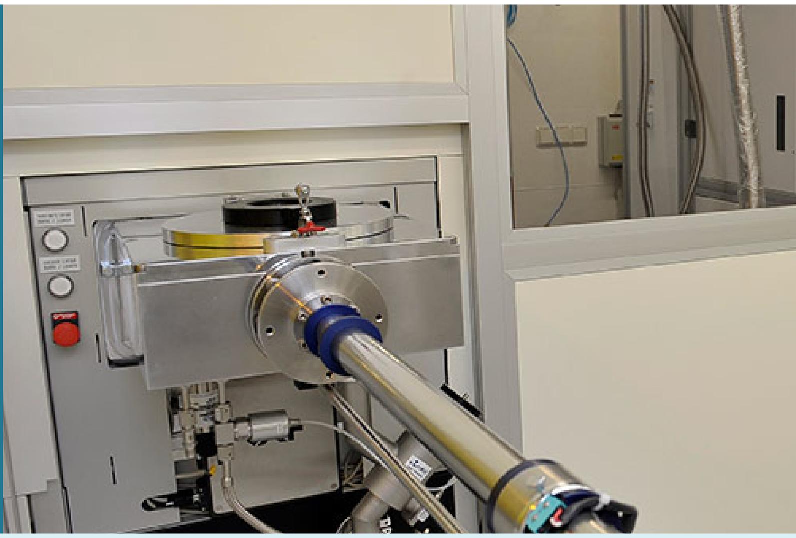
## DEPTOS

Mastering the faults in type P transparent semiconductor oxides



## INSPIRATION

Transparent and conducting thin layers are currently used extensively in several domains: low-emissivity windows, electrodes for solar cells, electrochrome mirrors, electromagnetic shields, etc. All of these devices are based on high conductivity (S>1000S/cm) type n transparent semiconductor oxides. In 1997, the discovery of the first type p transparent semiconductors provided for a new perspective for the realization of active transparent items, constituted by a junction of p-n. Up to now, the best semiconductor oxide has been CuCrO2 doped with Mg with a connectivity of 220 S/cm.

## INNOVATION

The DEPTOS project focuses on improving the electrical conductivity and optical transmission for delaffosite materials such as CuMO2 (M = Cr, B). Three avenues for improvement are being studied:

- formation of Oxygen intersites;
- formation of Copper gaps;
- combination of the two.

## IMPACT

To improve the current performances of transparent oxide semiconductors, DEPTOS will propose a new approach involving ion implantation as a means of controlling the Fermi level in the envisaged semiconductors.

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