

s13.m37.p1 **[Yb(H₂O)₈][Cd₃Cl₆(H₂O)]·6H₂O.** Samia Yahyaoui^a, Houcine Naili^b, Rached Ben Hassen^a, Bruno Donadieu^c, Jean Claude Daran^c et Abdelhamid Ben Salah^a, ^aLaboratoire de L'Environnement et de Sciences de Matériaux (MESLAB), Faculté des sciences de Sfax BP 802 3018 Sfax, Tunisie, ^bLaboratoire de Chimie de solide Faculté des sciences de Sfax BP 802 3018 Sfax, Tunisie, ^cLaboratoire de Chimie de Coordination Toulouse-France.
E-mail: abdelhamid.bensalah@fss.rnu.tn

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The title compound, namely octaquaytterbium(III) aquanonachlorotricadmate(II) hexahydrate, [Yb(H₂O)₈][Cd₃Cl₆(H₂O)]·6H₂O, was prepared by evaporation at 278 K from an aqueous solution of the ternary system YbCl₃-CdCl₂-H₂O and was characterized by elemental chemical analysis and by X-ray powder and single-crystal diffraction studies. The crystal structure can be viewed as being built from layers of double chains of CdCl₆ and CdCl₅(H₂O) octahedra separated by antiprismatic [Yb(H₂O)₈]³⁺ cations. The stabilization of the structure is ensured by O-H...O and O-H...Cl hydrogen bonds. A comparison with the structures of SrCd₂Cl₆·8H₂O and CeCd₄Cl₁₁·13H₂O is presented.

s13.m37.p2 **PtSi Formation on Silicon Substrate.** Zdenek Bochnicek^a, Jan Cechal^b, Tomas Sikola^b and Jan Krcmár^c, ^aDept. of General Physics, Faculty of Science, Masaryk University Brno, Czech Republic, ^bInstitute of Physical Engineering, Faculty of Mechanical Engineering, University of Technology, Brno, Czech Republic, ^cInstitute of Condensed Matter Physics, Faculty of Science, Masaryk University Brno, Czech Republic. E-mail: zboch@physics.muni.cz

Keywords: PtSi; Diffusion; Silicide

Transition metal silicides play the very important role in semiconductor technology. There have been extensive studies of phase sequences and silicide formation kinetics in the last decade.

It is well known, that silicidation of metal Pt layers occurs in most cases in two consequent steps Pt to Pt₂Si and Pt₂Si to PtSi. Both reactions are controlled by diffusion and the phase interfaces are moving according to the square root law.

The previous studies also show that transformation kinetics has been influenced by the presence of oxygen possibly coming from a native oxide layer or from an ambient atmosphere during annealing. In general, an oxygen slows down the transformation though in some cases no effect of higher partial pressure was observed. The effect of oxygen has been explained by its segregation at the transformation interface and, hence, the structural and chemical composition of the interface should be important for transformation kinetics.

To understand these effects in more detail, we have studied the reactive diffusion of Pt/Si couple using X-ray reflection (XRR), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), secondary ion mass spectroscopy (SIMS) and atomic force microscopy (AFM). We have concentrated on the learning of the role of oxygen partial pressure during annealing using both isothermal and constant temperature ramping annealing. The main goal of this study was to find the limiting oxygen partial pressure ensuring the creation of the PtSi phase in the whole film without unreacted remains of the metallic Pt phase and an access of Si on the surface. Additionally, the special attention has been also paid to the study of early and interim stages of transformation. We have proved a presence of a thin layer (consisting probably of the Pt₂Si phase) with very smooth interfaces at the as grown samples which means the formation of this layer starts even at temperatures under 200°C. The results achieved in this study will be described in details as well.