1100 nm. The EPR spectra show the existence of the radical cation with an unpaired electron per molecule, also there can be seen a dependence of the bandwidth on the $R_2$ substituents. Measurements of electrical conductivity show a semiconductor behavior in the studied temperature range, the values show as well a dependence of conductivity on $R_2$. The estimation of the drift mobility of charge carriers seems to indicate a hopping mechanism for the charge conduction.

*Paramagnetic Defects in* $\alpha$-$W_xV_2O_5$. Jacques Livage, Chakib R'Kha, Dominique Ballutaud, and Jean-Claude Grenet, Spectrochimie du Solide, Université Paris VI 4, place Jussieu, Paris 5e, France. Paramagnetic defects in $\alpha$-$W_xV_2O_5$ have been studied by ESR. A model is proposed where the unpaired electron arising from a valence induction effect remains localized on a single vanadium ion near the $W^{6+}$ along the $b$ direction. Introducing $W^{6+}$ leads to a lattice distortion which is more important than in the case of $Mo^{6+}$. A slight displacement of vanadium along the $a$ direction is observed in the defect, $V^{4+}$ showing a stronger tendency toward octahedral coordination than $V^{5+}$.

*Investigation of the Surface Composition of NiO–MgO Solid Solutions by X-Ray Photoelectron Spectroscopy.* A. Cimino, B. A. De Angelis, G. Minelli, T Persini, and P. Scarpino, Laboratori Richerche di Base, Assoreni, 00015 Monterotondo, Roma, Italy. The surface composition of NiO–MgO solid solutions has been investigated by XPS. It has been found that no appreciable deviation from bulk composition is present, or, if present, it goes in the direction of a slight depletion in $Ni^{2+}$ ions at the surface. The approximations involved and the problems encountered in the determination of the surface composition of air-exposed oxide samples are discussed.

*The Structure of Orthorhombic* $Na_2Ti_9O_{19}$, *A Unit Cell Twinning of Monoclinic* $Na_2Ti_9O_{19}$, *Determined by 1-MV High-Resolution Electron Microscopy.* Yoshio Bando, Mamoru Watanabe, and Yoshizo Sekikawa, National Institute for Researches in Inorganic Materials, Sakura-mura, Niihari-gun, Ibaraki 300–31, Japan. The crystal structure of the orthorhombic disodium nonatitanate, $Na_2Ti_9O_{19}$, has been determined on the basis of 1-MV high-resolution structure images, in which each site of the titanium and sodium atoms is clearly resolved. The crystal has an orthorhombic symmetry with lattice parameters $a = 12.2$, $b = 3.78$, and $c = 30.1$ Å. The space group of the crystal is either *Ccmm* or *Cc2m*. The crystal structure of the orthorhombic nonatitanate is closely related to that of the monoclinic nonatitanate reported previously in which the structure contains the sodium titanium dioxide bronze-type units connected by the bridging $TiO_6$ octahedra. The orthorhombic crystal can be described in terms of a unit cell twinning of the monoclinic crystal. It is shown that migrations of sodium ions occur by electron beam irradiation.

*Metal Telluromolybdates of the Type* $MTeMoO_6$. P Forzatti and P. Tittarelli, Stazione Sperimentale per i Combustibili, 20097 S. Donato Milanese (Milano), Italy. The solid-state reactions of $MMoO_4$ ($M = Mg^{2+}$, $Fe^{2+}$, and $Ni^{2+}$) and orthorhombic $TeO_2$ were investigated. A new metal telluromolybdate $MgTeMoO_6$ was obtained in the case of Mg; its structure belongs to the orthorhombic system with unit cell dimensions $a = 5.262$ Å, $b = 5.028$ Å, $c = 8.880$ Å. $Fe_2(MoO_4)_3$ and a new compound were formed in the case of Fe. The new compound is made up with $Fe^{3+}$ ions and its chemical formula cannot be recognized as FeTe $MoO_6$. In the case of Ni a complex reaction mixture is obtained. An explanation is given of the ability of $M^{2+}$ ions to form the metal telluromolybdates. The catalytic properties of $MgTeMoO_6$ are discussed and compared to those of the other metal telluromolybdates.

$Ba_3WFe_2O_9$ *(P6₃/mmc) and* $Ba_3WFe_2O_{8.42(5)}$ *(Fm3m): Comparative Study of the Crystallographic and Magnetic Properties.* G. Matzen and P. Poix, Département Science des Matériaux, 1, rue Blaise Pascal, B.P. 296/R8, 67008 Strasbourg Cedex, France. $Ba_3WFe_2O_9$ has a hexagonal structure which belongs to space group $P6_3/mmc$. Heated at 1350°C under a stream of helium, this compound gives an oxygen-deficient phase whose structure is an ordered cubic one (space group $Fm3m$). This passage from a hexagonal structure to a cubic one is consistent with the decrease of the Goldschmidt tolerance factor resulting from the $Fe^{3+}$ partial reduction. $Ba_3WFe_2O_{8.42(5)}$ (cubic) was compared with $Ba_3WFe_2O_9$ (hexagonal) and $Sr_3WFe_2O_{8.85(3)}$ (cubic) as to the crystallographical and magnetic properties. The study of the thermal stability in air for $Ba_3WFe_2O_{8.42(5)}$ revealed a reoxidation in several steps and the existence of a new cubic compound, stable in air over a broad range of temperature, and whose formula may be written $Ba_3WFe_2O_{8.71(5)}$.