compounds promising for NLO undergo dimerisation and crystallize in a centrosymmetric assembly. To avoid this, salts of organic cations were prepared, while the anionic network could prevent the dimerisation. The compounds reported in this contribution belong to the promising group of salts of polarizable organic cations with delocalized π – electrones, exhibiting so-called Y-aromaticity. Their cationic part is a guanidine derivative, connected with the anionic part by hydrogen bonds. The anionic part can be either inorganic (leading usually to chemical stability and resistivity) or organic (if chiral, providing acentric structure assembly). Properties of the final salt can be finely tuned by methods of crystal engineering – e.g. substitutions on the cation molecule, use of similar but slightly different anions etc. The structure of the material is determined. The measurement of second harmonic generation efficiency of the powderized sample including phase matching tests crowns the study of the material and the results are compared to the commercially available NLO materials as KDP (kalium diphosphate) or urea. The systematic "scanning" of groups of novel compounds with focus on the relation between their structure and optical properties is an efficient method of this branch of materials research.

**Keywords: non-linear optics; crystal engineering; guanidine derivatives**

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**Surface and Interface Study of Vanadium Oxide Nano Films.** Ramis Mustafa Oksuzoglu. *Department of Materials Sciences and Enginerring, Anadolu University, 26555 Eskisehir, Turkey.*
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Thin films of complex metal oxide systems (CMOS) as Vanadium Oxide [1-3] have gained great interest in recent years due to their potential applications in various optoelectronic devices. Among them including V2O3, V2O5, V6O13, VO2 exhibit phase transition from semiconductor phase to metal phase (Semiconductor-metal transition, SMT) [4] in the temperature range from 50 ºC to 70 ºC [5] and this change has gained strong interest in recent years due to accompanying effects as the high temperature coefficient (TCR) used in uncooled microbalometers [1, 3] and charge intercalation used in electro-chromics [6-8]. There are only few investigations on the thickness dependence [9-12] and they indicated that the thin VOx films (<100nm) deposited at low process temperatures (200 ºC) indicate amorphous structure, and films deposited at high temperatures (500 ºC) indicate a polycrystalline structure with promising VO2 phase. At low process temperatures (300 ºC), VO2 films possess with good TCR and ROS properties can only be obtained at high thicknesses of 1000 nm. We have produced VOx thin films of 37nm using DC–Reactive Magnetron Sputtering at room temperature and measured a TCR value of 2.3% C-1 with a high ROS of 1490 kΩ. In the present study, the thickness dependent structural evolution of VOx films in thickness range between 20nm - 50nm have been discussed in correlation to TCR and ROS values using X-Ray Reflectivity and Atomic Force Microscopy.

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**Keywords: X-ray reflectivity; atomic force microcopy; resistivity; metal oxide thin films; sensors**