Temperature dependence of pre-edge feature in Ti K-edge XANES spectra for ATiO\textsubscript{2}, A\textsubscript{2}TiO\textsubscript{3} (A=Mg, Ca, Fe, Sr and Ba) and TiO\textsubscript{2} compounds

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X-ray absorption near edge structure (XANES) provides important information on the electronic structure and local symmetry around X-ray absorption atom. There are three distinct pre-edge peaks correspond to electronic transitions in Ti K-edge XANES spectra. The composition, structure and temperature dependence of XANES spectra on three peaks was investigated. We measured Ti K-edge XANES spectra of various titanates, MgTiO\textsubscript{3}, CaTiO\textsubscript{3}, SrTiO\textsubscript{3}, BaTiO\textsubscript{3}, Mg, TiO\textsubscript{2}, Fe, TiO\textsubscript{2}, TiO\textsubscript{2} rutile and anatase, in the temperature range from 20K to 800K. Ti atoms are placed in TiO\textsubscript{6} octahedral and TiO\textsubscript{4} tetrahedral sites in crystal structures. The measurements of Ti k-edge XANES spectra were carried out in transmission mode at beam line BL-7C and BL-9A of the Photon Factory in KEK, Tsukuba. High temperature X-ray absorption measurements were made under a helium atmosphere. XANES spectra of all sample on each peaks is increasing as the temperature increases except for tetragonal BaTiO\textsubscript{3} and tetragonal SrTiO\textsubscript{3} phases. TiO\textsubscript{2} rutile and anatase have largely different rate of rising pre-edge absorption to the temperature. The XANES spectra in the high temperature region were strongly affected by the harmonic thermal vibration of the atoms. There is an interesting relation between electronic transition and local and anatase have largely different rate of rising pre-edge absorption to the temperature. The XANES spectra on each peaks is increasing as the temperature increases.

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Keywords: XANES, pre-edge peak, titanate

A gold(III) complex of the neuroepileptic drug gabapentin

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Gabapentin, a neuro-epileptic drug, has been the subject of interest lately as new polymorphs, [1] salts and hydrates have been reported, as well as the high pressure crystallisation of a novel heptahydrate [2]. The first complexes with transition metal complexes, Cu(II) and Zn(II) were reported recently by Braga and co-workers [3]. Since gold is known to have pharmaceutical applications [4] we were interested to see if we could prepare a Au(III)-Gp complex.

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Keywords: neuro-epileptic drug, gold(III) complex, gabapentin

Crystal structure of Zn complex with chelidamic acid and acridine

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4-Hydroxypyridine-2,6-dicarboxylic acid as carboxylate derivative has drawn extensive attention in coordination chemistry. This ligand could potentially provide various coordination motifs to form both discrete and consecutive metal complexes under appropriate synthesis condition [1,2]. We prepared new mononuclear complex of Zn(II) containing 4-hydroxypyridine-2,6-dicarboxylic acid...