

# Studies on Tetramethylammonium Selenate(VI) and Chromate(VI)

Michael Malchus, Martin Jansen\*

Max-Planck-Institut für Festkörperforschung, Heisenbergstraße 1, D-70569 Stuttgart

Z. Naturforsch. **53 b**, 704–710 (1998); received March 5, 1998

Tetramethylammonium Selenate(VI), Tetramethylammonium Chromate(VI), Crystal Structure, Vibrational Spectra, Thermal Analysis

$[\text{N}(\text{CH}_3)_4]_2\text{SeO}_4$  and  $[\text{N}(\text{CH}_3)_4]_2\text{CrO}_4$  have been investigated by Infrared and Raman spectroscopy, coupled thermogravimetric and differential thermal analysis combined with mass spectroscopy of the evolved gases and temperature dependent X-ray diffraction. The crystal structure of  $[\text{N}(\text{CH}_3)_4]_2\text{SeO}_4$  has been determined from single crystal data (cubic,  $\text{Fm}\bar{3}\text{m}$ ,  $a = 11.1077(7)$  Å,  $Z = 4$ ) and reveals  $[\text{N}(\text{CH}_3)_4]^+$  cations and  $\text{SeO}_4^{2-}$  anions to be arranged in a  $\text{Li}_2\text{O}$ -type of structure. While the cation framework of regular tetrahedra is orientationally fixed, the selenate anions are disordered. Powder diffraction data show  $[\text{N}(\text{CH}_3)_4]_2\text{CrO}_4$  to be isostructural (cubic,  $\text{Fm}\bar{3}\text{m}$ ,  $a = 11.039(1)$  Å,  $Z = 4$ ).

\* Reprint requests to Prof. Dr. Martin Jansen; Fax: +49 711 689 1502.