Structural Investigation of Vanadium – Sodium Metaphosphate Glasses

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The structure of the glass forming system $(V_2O_5)x - (Na_2O \cdot P_2O_5)_{(1-x)}$, ($x$ = 0–0.4), has been investigated using Raman spectroscopy. The stretching vibrations of various phosphate groups, connected to phosphorus or vanadium atoms, have been assigned. Variation of the composition leads to structural changes where the sodium metaphosphate -P–O–P-chains break and then reconnect with the oxovanadium units forming a -V–O–P-network structure.

Key words: Vanadium; Phosphates; Vanadium Glass; Raman Spectroscopy; Metaphosphates.