Simeonova Z., **Gavazov K.**, Alexandrov A., *Ternary complex of vanadium(V) with 4-nitrocatechol and tetrazolium salt and its application to extraction-spectrophotometric determination of vanadium(V) in steels*, ***Analytical Laboratory***, **7** (4) (1998) 184-188.

The new ion-association complex of vanadium(V) with 4-nitrocatechol (4-NC) and iodonitrotetrazolium chloride (INT) is studied. The complex is sparingly soluble in water but rarely soluble in chloroform. The suggested composition of the complex was confirmed by two independent methods to be V(V) : 4-NC : INT = 1 : 2 : 2. The optimum extraction conditions (pH = 4.75 - 5.1 3, concentration of the reagents, time) and the effect of foreign ions, were established. Beer's law was obeyed within the limits of 0.2 - 2.6 μg/ml V(V). The molar absorptivity of the complex at λ_{max} = 400 nm was calculated to be ε = 1.7 x 10^4 l/mol.cm. With the use of 8-hydroxyquinoline and F^-, vanadium was separated from the following interfering elements: Mo(VI) (15-fold excess), Cu(II) (30-fold excess), Al(III) (400-fold excess), Zn(II) (750-fold excess), CrO_4^{2-} (225-fold excess), Fe(III) (700-fold excess), W(VI) (100-fold excess), Nb(V) (75-fold excess), Ti(IV) (100-fold excess). The extraction constant (K_{ex}), the distribution constant (K_D) and the association constant (β) were determined as well. A new extraction-spectrophotometric method for determination of vanadium in steels was developed. The method has sufficient selectivity and good precision (S_r = 3%). It is superior to some known methods of this kind.

Keywords: Extraction, Spectrophotometric determination, Vanadiurn(V), 4-Nitrocatechol (4-NC), Iodonitrotetrazolium chloride (INT), Steel