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SYNTHESIS, CHARACTERIZATION AND X-RAY STRUCTURE ANALYSIS
OF A NOVEL POLYOXO-AZIDE, "BALLERENE" TYPE COMPLEX, WITH
MIXED VALENCE STATES OF VANADIUM (IV)-(V).

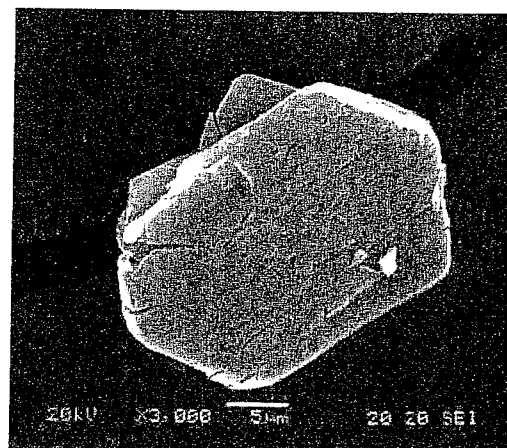
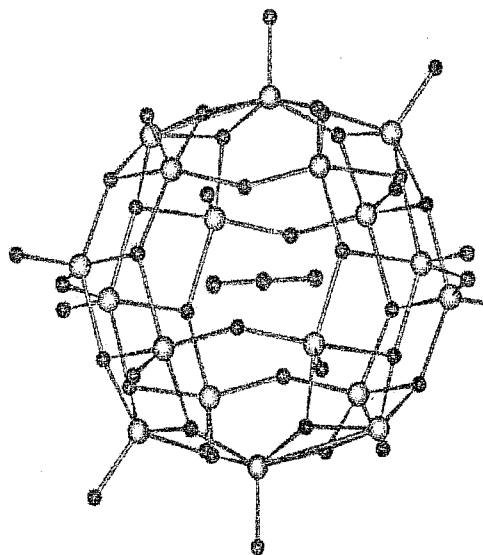
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Vanadium is an essential trace element, with relevant biological and therapeutical properties, therefore it posses a special status among all biometals. A variety of vanadium compounds have been synthesized so far in an effort to offer better tolerance, more potent activity, increased selectivity and less toxicity in cancer treatment^[1]. Thus many research groups have focused in the synthesis of novel vanadium compounds^[2], which have been extensively reviewed^[3]. In our effort



to prepare new electroactive amperometric mediators, we study the electrochemical behaviour of the binary system $\text{NH}_4\text{VO}_3\text{-NaN}_3$, before and after thermal treatment^[3]. Finally we managed to isolate for a first time the ballerene-type cluster, with catenes hyphenated by V(IV)-V(V) strong interactions, along with a $[\text{N}_3^-]$ radical located at the center of the cluster, as it can be seen in the picture above. The cluster with the molecular formula $\text{Na}_{10}[\text{V}_{18}\text{O}_{44}\text{N}_3]\cdot 33\text{H}_2\text{O}$, is centrosymmetric and crystallizes in the triclinic P-1 space group, with cell parameters: $a=12.019$ Å, $b=13.114$ Å, $c=13.425$ Å, $\alpha=114.77^\circ$, $\beta=92.86^\circ$, $\gamma=113.93^\circ$, $V=1693.44$ Å³. There are two