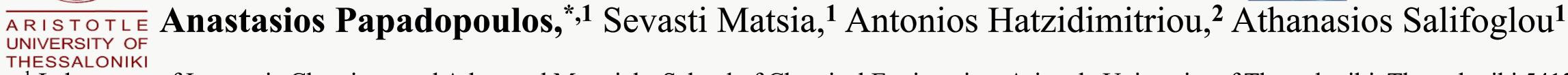


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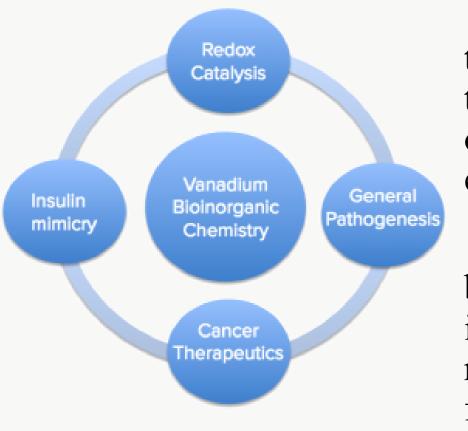


Hybrid dinuclear vanadium complexes with natural substrates as potential therapeutic agents in human pathophysiology LABORATORY OF INORGANIC CHEMISTRY AND ADVANCED MATERIALS



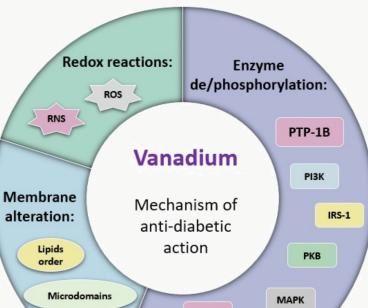
<sup>1</sup> Laboratory of Inorganic Chemistry and Advanced Materials, School of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece <sup>2</sup> Laboratory of Inorganic Chemistry, School of Chemistry, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece E-mail: anastasmp@cheng.auth.gr

## Introduction



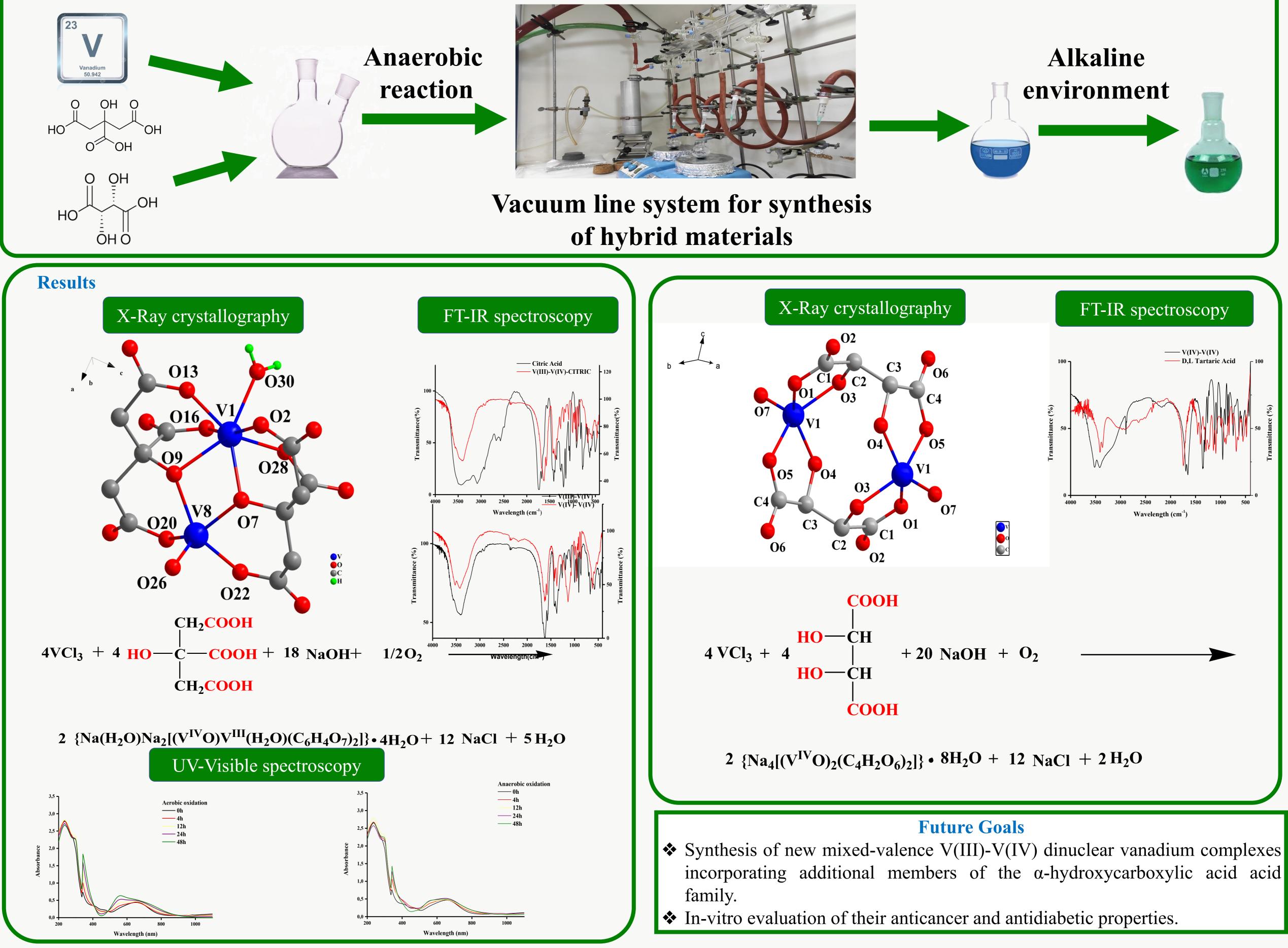
In recent years, vanadium in the oxidation states V(IV) and V(V) has attracted increasing interest in therapeutic medicine, due to the diverse nature of metal-organic complexes, which have demonstrated therapeutic activity against various pathologies. In this study, an extensive investigation was conducted over a broad spectrum of binary and ternary vanadium compounds with physiological substrates, which exhibit biological profiles reflecting anticancer properties and insulin-mimetic activity.<sup>1</sup>

More specifically, V(IV) complexes with natural substrates, such as  $\alpha$ -hydroxycarboxylic acids have been shown to enhance insulin activity in reducing elevated plasma glucose levels, activate enzymes involved in xenobiotic metabolism, and inhibit cancer cell-signaling pathways.<sup>2</sup> In the present work, novel types of hybrid binary vanadium complexes with physiological ligands were developed, including, for the first time, dinuclear complexes featuring different oxidation states of vanadium.





### **Materials and methods**



#### Conclusions

Two dinuclear vanadium-( $\alpha$ -hydroxycarboxylic acid) complexes were synthesized via aqueous speciation employing citric and tartaric acids as binding-bridging ligands. The first one, a mixed-valence V(III)-V(IV) species, was obtained under strictly anaerobic conditions with two citrate bridges. It was isolated via V(III) oxidation, V(IV) reduction, and reductive coupling of a V(IV)-V(IV) dimer. The second complex consists of two V(IV) centers bridged by tartrato ligands. Both compounds were

#### Literature

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