



## A New Hybrid Material of Vanadoaluminophosphate templated by 1, 3-Diaminopropane

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### Abstract

A vanadoaluminophosphate has been hydrothermally synthesized at 180°C, under autogenously pressure in the presence of fluoride anions and diaminopropane (D.A.P) as structuring agent. The VAPO-DAP material was characterized by: Powder X ray diffraction, FT-IR, S.E.M., Chemical and thermal analyses and NMR spectroscopy (<sup>27</sup>Al, <sup>31</sup>P & <sup>51</sup>V). The following empirical formula agrees with the results of the characterization: VAPO-DAP = [Al<sub>5</sub> P<sub>5</sub> V<sub>0.25</sub> F<sub>1.4</sub> O<sub>26</sub>]<sup>2-</sup> [H<sub>3</sub>N (CH<sub>2</sub>)<sub>3</sub> NH<sub>3</sub>]<sup>2+</sup>. The advantage of this method is that the pressure of the medium increases slightly under these conditions and this pressure can lead to crystallization phenomena at low temperatures for this type of material (<200 °C). It is also possibility of obtained metastable phases original inaccessible through “high temperature”, this is an interesting asset of this technique. This material has been tested by aerial oxidation of cyclohexane to cyclohexanol, in the growing field of solvent-free industrial reactions.

*Keywords:* Thermal analysis, Spectroscopy, aluminophosphates, vanadium, diaminopropane.

### 1. Introduction

Aluminophosphates synthesis was first initiated by Wilson and his coworkers in 1982 [1]. The success of their process has incited many scientists working in the same field to prepare substituted aluminophosphates using transition metals such as: V, Fe Mo, Ti, W, Ga, Zn, Co [2-11].