

CRYSTAL CHEMISTRY MINING EXPLORATION “CRYS-EXPLO”

José Cipriano Vilca Valdivia*

Department Of Geochemistry and Paleomagnetism, Private University of Tacna, Granada, Tacna, Peru

***Corresponding author:** José Vilca VC, Department of Geochemistry and Paleomagnetism, Private University of Tacna, Granada, Tacna, Peru, Tel: 959342455; E-Mail: jcvilca45@gmail.com

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Introduction

Discovering new mines, in places evicted and stigmatized by the other methods, is one of the applications of Crystal Chemistry Mining Exploration, "Crys-Explo", see figs. 1, 2 and 3. When it is only Crys-Min Mining Crystal Chemistry, the results in the core drilling analysis is enriched and the precision is increased by up to 40%, its application works well, from mining to reuse and reduction of mining waste, demanded by the same mine and also by other industries, See Annex 1 paper: "Important improvements in mining with X-Ray Diffraction, reduces operating costs, greater recovery of ore and reduction of waste volumes miners", ProExplo 2019 Lima, Peru.

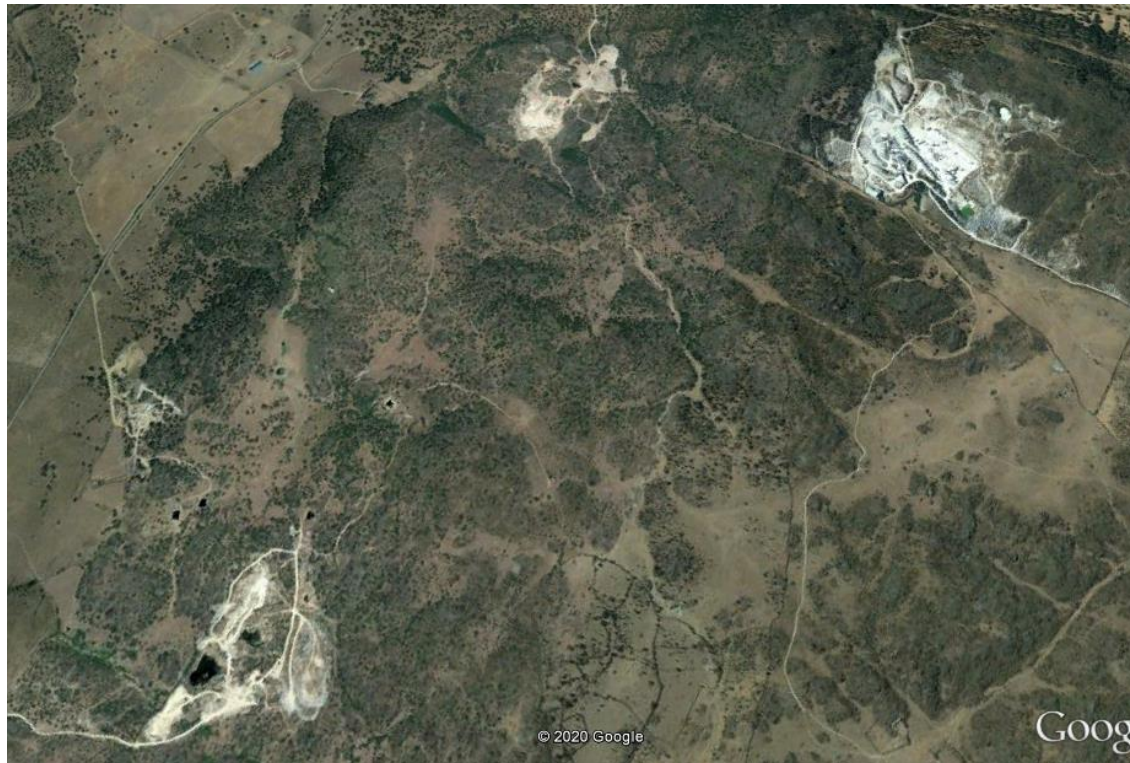


Fig 1: It is an area of land, located between the cities of Cáceres and Trujillo, Extremadura, Spain. 500 years of waiting to finally undertake its Integral development thanks to Mining.

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Training Drones equipped with detectors that can measure sling lengths, along with those used on Planet Mars, by NASA, is what we are doing, to discover more natural resources.

In the indirect results, we have a progressive increase in inventories in possible exploratory objectives, with the reincorporation of apparently abandoned and / or undetected mining prospects; therefore, it contributes to exploring comprehensive development options, Economic-Social-Environmental, in regions that were not previously considered important.

A good integral development experience has been made by a Peruvian mining company, within the framework of the Peruvian-Chilean work, it invested money obtained in the mines of Peru, to transfer it to salmon farms in southern Chile and sell them to niches in Exclusive markets with a tendency to increasing demand.

Diversifying is the future, the stage of investing what has been achieved in mining has ended, only in mining, we still fail to understand, how it is that we all always believe that we are independent, when we are always in "Network" we are permanently linked, united, because we are dust of stars, a butterfly flies in an unfathomable incommensurable place in the Universe and we cannot avoid or deny that it affects us, see book: "The Universe and the Origin of the Earth", author: José Vilca, Editorial Santillana, Spain.

It is pride, which makes us believe that we are experts in a certain part of knowledge, when that knowledge is indivisible and we fail to try to make a holistic interpretation, which is a methodological and epistemological position, which postulates, how systems and their properties they must be analyzed as a whole and not only through the component parts.

Crystal Chemistry Technology and Evidence of its success in mining

The proof of the success of this Crys-Explo methodology is the open pits, in full mining operation, in a place delayed for more than 500 years, see figs. 1, 2 and 3 boxes 1, 2 and 3. These mining operations we can see them from the office, via satellite, monitorial as and do the monitoring in real time, to do the respective verification and verification.



Fig 2: With the help of the satellite, we can see 4 open pits, discovered with Crys-Explo, in the box Dr. Gladys Ocharan, certifies these positive results, Dr. She is in the intrusive (Pluto) of Plasenzuela, the The crystallo-specialization of these Ups Petrological Units is for Tin, Niobium and Tantalum. The Structural Crystal States ECE have served to detect mines, only in the North and Northwest part of this intrusive (source: José Vilca, doctor thesis, UAM, Madrid, Spain).

The Crys-explo Mining Crystallochemical exploration has revolutionized the search and identification of mineral deposits, it is not qualitative, it is rather quantitative, it has a very high precision and it is very fast to obtain positive results, it even corrects the results of other methods of exploration that gave negative results.

Crys-Explo, has achieved the definitive certification so that Geology and its specialties are within the quantitative sciences, the success it is achieving is because it applies technologies, for the first time, developed in other fields of

knowledge and especially technologies emerging in the approval process. With this, it reconstructs the Crystallogenesis of the magma and typifies the atomic arrangements in a sequential way, see Figs.: 7B, 8 and 9, this is a new scenario, where it is confirmed that the Mining Industry, moves everything, is an engine of development, so that in the case of Extremadura, Spain, ensures the reactivation of regions postponed for many years as well as in this case, there are large evicted regions, which can be explored again.

This happens, as a consequence that the Earth Sciences and in this case the geochemical and geophysical specialties of Geology, have been totally isolated from the advances and emerging technologies and in the process of verification, from the other fields of knowledge, such as the Electrochemistry and the mini analytical artifacts from NASA see Figs. 4A, 4B and 4C. Figs: 5A, 5B, 5C and 5D. We have verified, by having been and tested in the universities of Brazil, where every year they receive prototypes of equipment under test from the great centers of research and development of new technologies. Many of them ready to look for new applications, which is what we have done to question and propose new routes to find not only mineral deposits but large gas reserves in China, Russia and Argentina, proposing programs to solve the growing trend of the pollution and finance citizens of excellence, with a very interesting capacity and economic power for companies and these citizens will have the ethical, moral and professional solvency to design planning for new citizens.

The anomalous concentrations of certain specific chemical elements, recognized in the industry as minerals, have developed, only in the North and Northwest part of the Intrusive Plasenzuela, in the South and East part, we will not find, at least these crystallogenic conditions, some of the which are: The preferential tetrahedral positions of the atoms studied with X-ray Diffraction and Synchrotron Mossbauer Spectroscopy (see Figs and other variations of technologies that we have made, in order to quantify, for example, how the Aluminum atom moves to critical positions, referring to the identification of mining deposits.

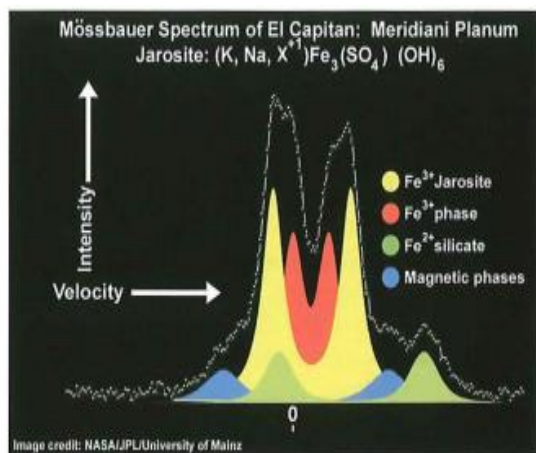


FIGURA 6. Espectro Mossbauer de la jarosita descubierta en "El Canitán". Meridiani Planum (Marte). Foto: NASA.

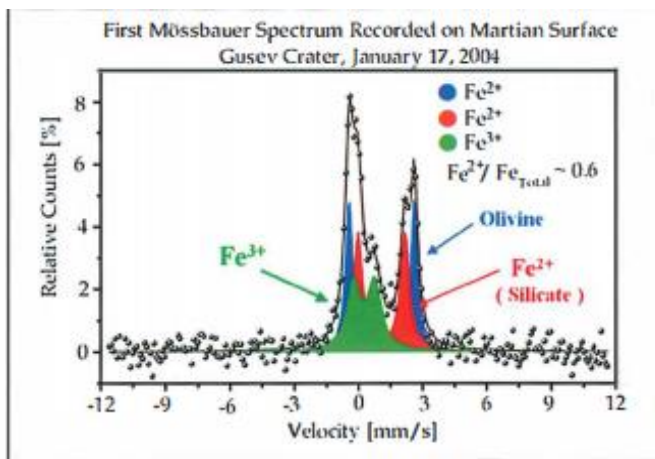


FIGURA 8. Espectros indicativos de olivino y silicatos de hierro obtenidos en el cráter Gusev de Marte. Foto: NASA.

Modify almost all the methods of preparing the field samples, changes and expansion of the precision ranges of the measuring equipment, such as bringing the scales to 4 decimal places and with them achieving a separation of minerals from rocks with a purity of 99.9 % without which it would not have been possible to proceed to the analysis with EPR Paramagnetic Resonance Spectroscopy, which measures electron spin transitions. The EPR technique is a method that allows the concentration of paramagnetic centers and free radicals to be measured in solids and liquids, which it is translated in the detection of distortions that the minerals present (better said of the ECE Quantitative Structural Crystal States) that replace the qualitatively mineral ones. The most frequently found distortions are in the ECEs of UP-17 see Figs.: 7B, 8 and 9.

In one of my publications: "Practical Method for Measuring the Chemical Amplitude of Structural Perturbation in the Strained K-Feldspar" Fourth European Crystallographic Meeting, Oxford, England p. 565 proposed a method to measure these distortions, in the year 1977 without using EPR Electron Paramagnetic Resonance, see Figs this situation caused a stir and was reason for those of the University of Oxford, England, to dedicate an important time to commission A doctor from Peru, to find me in PetroPeru and verify that what I indicate in that paper works, more than 40 years have passed and now in 2020 the EPRs make these determinations with greater ease and precision, useful for mining exploration, the point is that, back then, an atmosphere of doubt and mistrust was noticed, they believed that we had cheated, but that it is now sanctioned and corroborated, that it does work. See Fig.

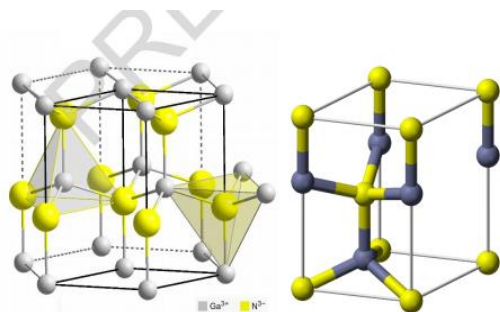


Figure 1.1. The wurtzite crystal structure of GaN showing the tetrahedral bonding for Ga (gray spheres) and N (yellow spheres) atoms with a view of the (a) hexagonal crystal symmetry and (b) primitive unit cell. Figures courtesy of Wikipedia [39].

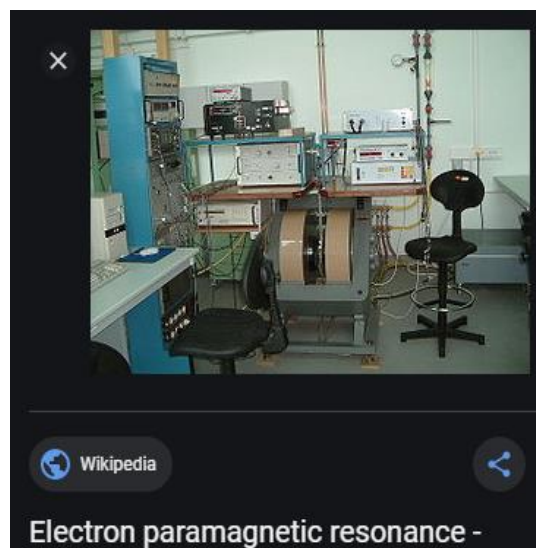


Fig. 9^a

Fuente: An Electron Paramagnetic Resonance Study of the Magnesium Acceptor in Gallium Nitride in Different Crystal Field Environments

Sunay, Ustun Robert. The University of Alabama at Birmingham, ProQuest Dissertations Publishing, 2019.

In the work with EPR: "Investigation by electronic paramagnetic resonance (EPR) of clays delaminated with TiO₂, prepared by J.G. Carriazo, et al. Department of Chemistry, Universidad Nacional de Colombia, Bogotá Office, 2014: "This article shows the characterization, by means of electronic paramagnetic resonance spectroscopy (EPR), of a set of delaminated clays, see Figs with TiO₂ and Fe / TiO₂ obtained by different synthesis procedures. EPR analyzes showed a significant shift of the central "g" value as a consequence of Fe³⁺ + insertion by substitution into the TiO₂ structure by a direct and sensitive method of incorporation of iron (III) ions. Additionally, a set of symmetrically distributed g-values was observed around the central g-value lines, which are attributed to vacancy trapped electron sites (defects) of the TiO₂ structure. The spectroscopic characterization carried out in this work contributes to the understanding of the photocatalytic properties previously observed for the synthesized solids."

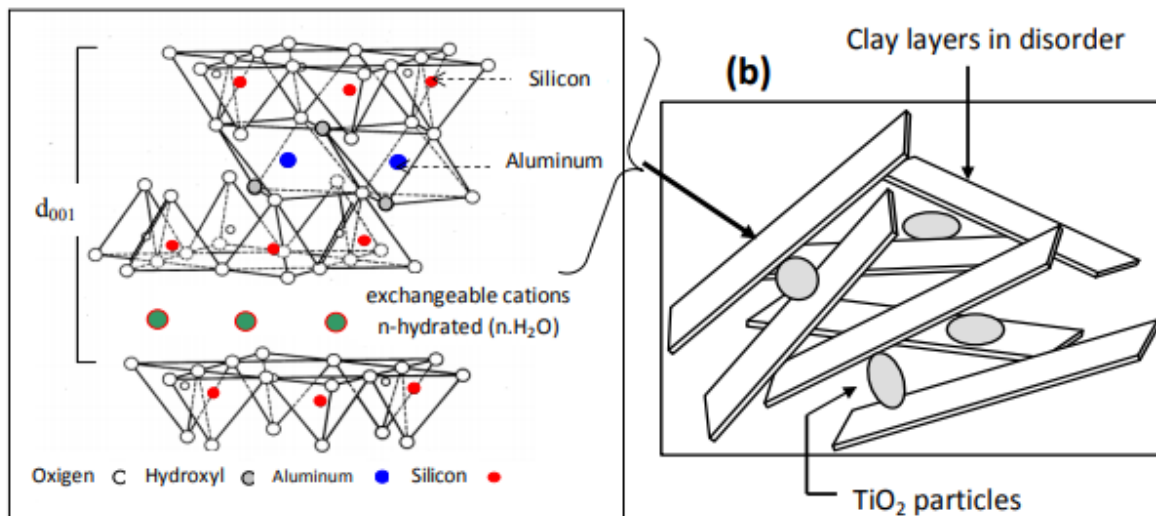


Fig. 1. Schematic representation of a smectite-type clay mineral (a), and a model of the delaminated-clay microstructure obtained by intercalation of TiO₂ (b).

Figs. The Aluminum and Silicon atoms are those that command the ordering not only in these structural Crystal States, it is one of the foundations for having discovered mines in areas not conducive to exploration, such as

I must confess, in relation to those mineral works such as J.G. Carriazo, who, enter the EPR lab, which was not in the labs. where I worked at the UAM, it was an inexplicable impulse, how a geologist from Peru was looking to analyze his field samples with ERP, something supernatural happened at that time, it was an irrepressible impulse, I have always had these moments since I was 6 years old , when I improvised the first record player, uniting a winding clock with an old record player, the same thing happened also at the Institute of Natural Sciences and Resources, BGR Hannover, Germany, Go up and knock on the door of a laboratory that I did not know was inside, I was left Shocked that the Doctor who treated me, seemed to be waiting for me and with the results of the analyzes he was carrying, he resolved in a few minutes the main part of my research work, the result of which was the discovery, for the first time, of Gas in rocks prohibited from exploring (see Figs., "Organic and Isotopic Geochemistry, in the new Peruvian oil targets", author José Vilca Petroperu year 2008 and Coloq International, I took the 10 samples in my suitcase, to Hannover without knowing the PETROPERU authorities.

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