

# UNAH visit report June 2024

(Luis De Los Santos Valladares)

## 1.- Meeting with the students

The first day of the arrival to Huanta there was a meeting with the students in order to plan their possible themes of research for their thesis. A photo of the meeting is given in Fig. 1.



Fig. 1. Meeting with the teachers and students of the UNAH for planning the possible title of thesis of the students.

## 2.- Giving a talk

Title of the talk: 'Physical and chemical characterization of Peruvian soils and sediments: Preliminary results.'

The talk was given in Spanish language at the RICTA conference, organized by the Universidad Nacional Autonoma de Huanta. The talk was about the physical and chemical characterization of soils and sediments from Peru, in which preliminary result obtained up to now were presented. For the morphological analysis discussions, the talk focused on the Scanning Electron Microscope (SEM) technique. The fundamentals of the technique were explained and parts of an SEM were described. For the chemical analysis, the Energy Dispersive X-ray spectroscopy (EDX) was explained and also compared with other similar techniques such as X-ray Fluorescence (XRF) spectroscopy. Results obtained by ICP-MS were also presented. At the end of the talk all the questions from the public were resolved. The talk was streamed online. The link of the talk is:

<https://www.facebook.com/share/v/TJaKveH1Stku9VcW/>

Figure 2 shows photos taken during the talk.

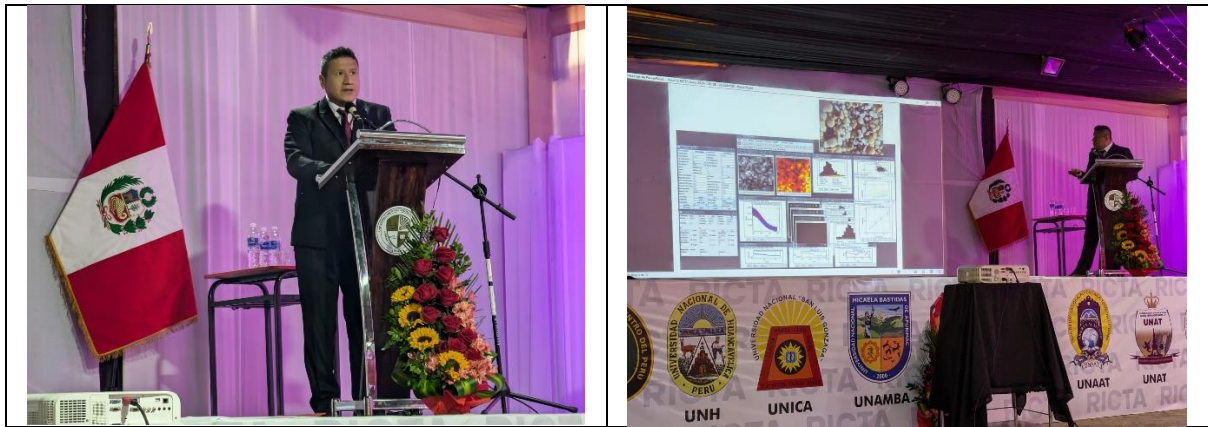


Fig. 2. Photos taken during the talk of Dr. Luis De Los Santos Valladares about the Physical and chemical characterization of Peruvian soil and sediment: Preliminary results.

### 3.- Workshop

A workshop about the “Preparation of sediment samples for ICP-analysis” was given by Dr. Luis De Los Santos Valladares about the initial treatment of sediment and soil for posterior measurements by Inductively Coupled Plasma – Mass Spectrometer (ICP-MS). During the talk, the protocols for managing the samples before characterization were taken in practice. Since, drying them, sieving them, grinding them and initial inspecting by an optical microscope. The initial procedures for the digestion of the sediment samples were also explained. Figure 3 shows some photos taken during the workshop.





Fig. 3. Workshop performed by Dr. Luis De Los Santos Valladares at the UNAH about managing sediment and soil samples for posterior measurements by ICP-MS.

#### 4.- Supervising the thesis of the student Dina Huanaco and Jhon Ramos.

Title of the Thesis: “Physical and chemical characterization of sediments collected from the water plant treatment from Luricocha - Huanta, Peru”. The supervision was performed in person with the students. Everyday Dr. Luis De Los Santos Valladares had sessions with the students, in the auditorium of the “El Bosque” building of the University of Huanta and in the laboratory in CONSAC. An extensive redaction for the undergraduate theses were prepared. The theses consists of analysing sediment samples collected from different areas in Huanta, as well as from the three water plants located in the City. In the case of the water treatment plants, the sediments were collected before, in, and after the water plant. The extensive training consisted of treatment of the samples before the analysis, inspection by optical microscope, analysing the principal chemical composition and quantification of the chemical data by using the available database and statistical programs

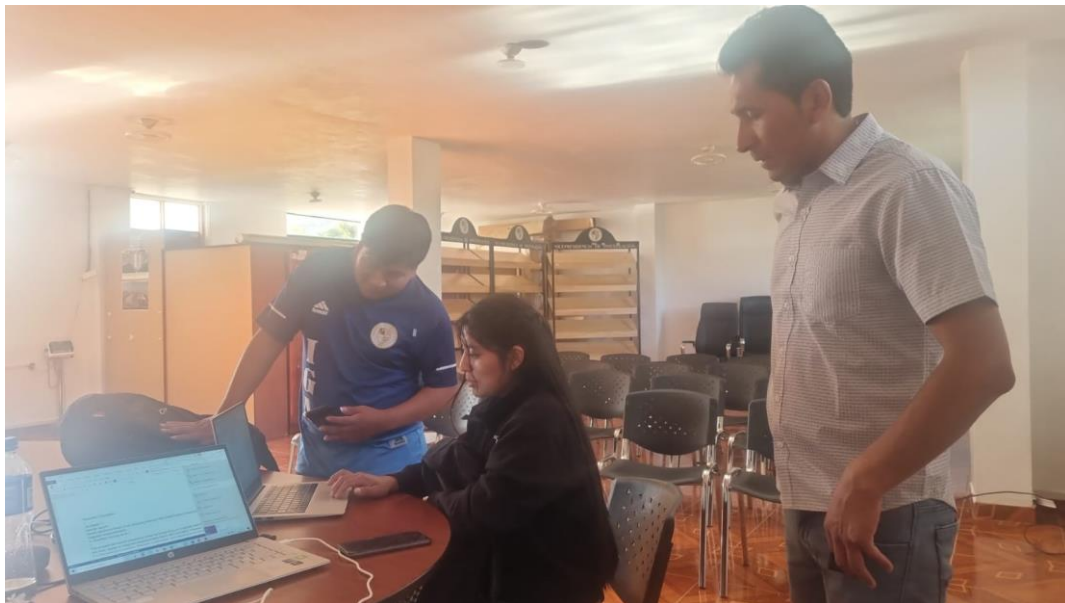


Figure 4. Extensive supervision of the students Dina Huanaco and Jhon Ramos



## 5.- Visiting the Universidad Nacional Mayor de San Marcos.

Two students from the “Escuela Académica de Ingeniería y Gestión Ambiental” of the Universidad Nacional Autónoma de Huanta, Jhon Olger Ramos (DNI 71410529) and Dina Marleni Huanaco Quispe (DNI 74385644) visited the Laboratorio de Cerámicos y Nanomateriales of the National University of San Marcos, Lima, for one week. During the visiting, the students were trained in the preparation of soil and sediments samples (see Fig. 5 (a)), using a scanning electron microscope for the inspection of soil samples (see Fig. 5 (b)), using a differential scanning calorimeter (see Fig. 5 (c)), using a Fourier Transform- Infrared Spectrometer adapted with a Thermogravimeter equipment for the analysis of sediment samples (see Fig.5 (d)), using a gamma spectrometer for the analysis of the natural radionuclide components in soil samples (see Fig.5 (e)), as well as discussing their research activities and planning future visits with the Dean of the Faculty of Physics of the University of San Marcos (see Fig.5(f)).



(a)



(b)



(c)



(d)



Fig. 5. Visit of two students from the “*Escuela Académica de Ingeniería y Gestión Ambiental*” of the Universidad Nacional Autónoma de Huanta, Jhon Olger Ramos (DNI 71410529) and Dina Marleni Huanaco Quispe (DNI 74385644) to the Laboratorio de Cerámicos y Nanomateriales of the National University of San Marcos, Lima.