

## Microscopy in Ecuador

Alwyn Eades

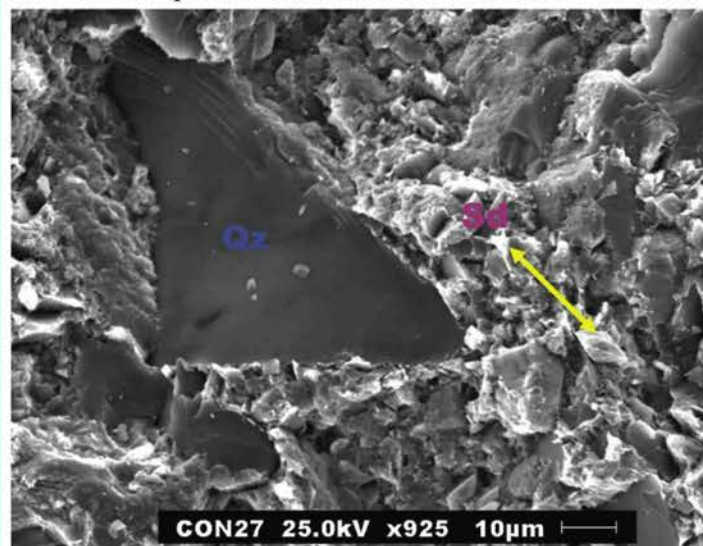
Lehigh University, Bethlehem, PA

jae5@lehigh.edu

The present situation in Ecuador is not a happy one. You would think that this ought not to be the case. There are seven electron microscopes in the country and all of them are in working order (although with problems – see below), so why then are things not good. The problem begins with geography. Unlike most smaller countries, Ecuador is not dominated by a single large city. There are two major cities, locked in a continuous rivalry: Quito, the capital, is in the mountains, and Guayaquil, the larger city, is on the coast. They are about seven hours apart by road. Both cities have electron microscopes. Worse, however, is the fact that, in each city, the microscopes are in two different locations – making a total of four microscopy centers. This is too many and Ecuador can not support them all effectively.

The most effective center is in the National Institute for Hygiene and Tropical Medicine, in Guayaquil. They have four microscopes: two SEMs - a JEOL 5310 and a Hitachi S 430 - and two TEMs a JEOL 1010 and a JEOL 100C. The older instruments are used only for teaching while the newer instruments are used mostly for pathology and other relatively routine analyses. Despite this apparent strength, there are only three active users of these instruments. It is not enough to secure long-term stable operation.

The other center in Guayaquil is in the Center for Geological Research in the labs of Petroecuador, the national petroleum company. They have a Philips 515 SEM (with EDS) that has been regularly and frequently used for the analysis of geological samples related to oil exploration, as well as a lot of work on microfossils.



Angular quartz cemented by silica and siderite. From a depth of ten thousand feet.

The two labs in the Quito area are in worse shape. The Social Security Hospital has a TEM - a JEOL 100C. But, since its sole user has been promoted to a senior administrative post, it has not been used for a year. In the Polytechnic University of the Army (in Sangolquí, just outside Quito), there is a Zeiss 960A SEM (with EDS). It was abandoned for a time but is being brought back into operation. It does not yet have a user base, although there are

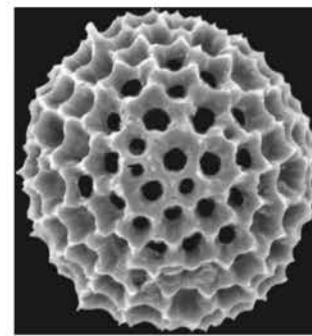
signs that the administration is taking steps to make good use of this instrument.

What these centers have in common is a lack of infrastructure. Two of the most important instruments had problems during my visit (the JEOL 5310 and the Philips 515) and the resources for fixing them are inadequate. At all of the centers, there is a lack of qualified users. As in the case of the hospital in Quito, all of the centers are vulnerable to complete collapse if one or two people were to leave or get promoted.

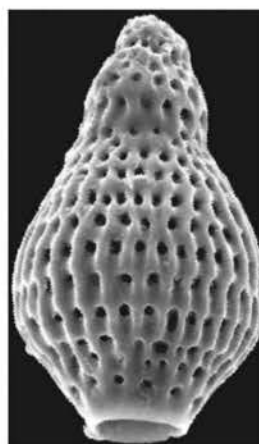
Overall then the problem is one of resources spread too thinly. The activity in Ecuador could support one center for electron microscopy but can not support four. However, for geographical and political reasons, four is what they have. This makes it all the more important that the four centers collaborate as much as they can. It would be very helpful if the people involved in the four centers were to meet on a regular basis and work together to develop their collective strength. For there to be a successful future for electron microscopy in Ecuador, I think that the four centers would need to think of themselves as part of a single group. ■



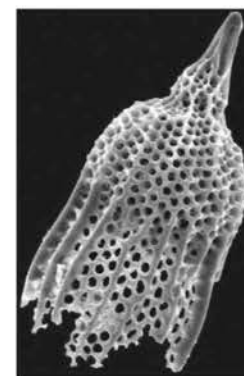
Catapsydrax stainforthi  
Mioceno Temprano  
Fm. Dos Bocas  
Cuenca Progreso



Melitosphaera sp.  
Oligoceno Tardío  
Fm. Pambil  
Cuenca Borbón



Theocampe amradillo  
Oligoceno Tardío  
Fm. Pambil  
Cuenca Borbón



Theocyrtis annosa  
Oligoceno Tardío  
Fm. Pambil  
Cuenca Borbón

### Translations

*Catapsydrax stainforthi*, Early Miocene

*Melitosphaera* sp., Late Oligocene

*Theocampe amradillo*, Late Oligocene

*Theocyrtis annosa*, Late Oligocene



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