X-ray microfluorescence, microradiography and tomodensitometry provide a broader view of the archaeological space

<table>
<thead>
<tr>
<th>Mode</th>
<th>densité(HU)</th>
<th>Vol.</th>
<th>dentine+émail(mm³)</th>
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<td>1_0.4_V90u_3*</td>
<td>445</td>
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**Multidisciplinary Laboratory of CT-Scan for Non-Medical Use**

This laboratory allows for non-destructive measurements of the internal density variations on static body (internal structure, porosity, etc.) or dynamic phenomena, mainly hydrodynamic (experiment in 4D). It is the only facility of its kind in a Canadian university.

**The ITRAX™ Core scanner was developed by Cox Analytical Systems.**

The principle of operation is based on the simultaneous acquisition of microdensity (radiography) and microcompositional variations (XRF) using two separate X-ray detection systems. Moreover, colour information and magnetic susceptibility are provided through respectively a high resolution digital line-scanning camera and a magnetic susceptibility sensor incorporated in the system. The analysis is performed without touching the sample surface and is completely non-destructive.

**Characterization of archaeological soils**

**Loyola Site, Guyane**

- Caracterize the chemical elements from the decomposition of human body: Calcium, Selenium, Phosphorus, Potassium, Sulfur, Copper, Magnesium, Zinc, lead
- Localize burials and cemetery
- Identification of types of occupations by chemical elements in archaeological soils, kitchen, dump, artisan workshops, etc.
- Land management and physical perturbation on soil
- Non-destructive samples analysis/objects integrity

**Cemetery and Blacksmith Shop**

**Fort Ville Marie, Montreal**

- Identification of pottery types on the basis of tempering agents
- Characterization of raw material
- Identification and proportions of inclusions and air spaces
- Identification of manufacturing Techniques
- Density of ceramic paste and other materials

**Chemical and physical characterization of old materials with ITRAX and the CT scan**

Example: Site ElFt-24 lac Arques
- La caché > Storage and survival box on the Cree historical site

**Agents**

- Ceramic shard with lead glass
- Prehistoric ceramic shard
- Lead and Sulfur, Copper, Magnesium, Zinc, lead