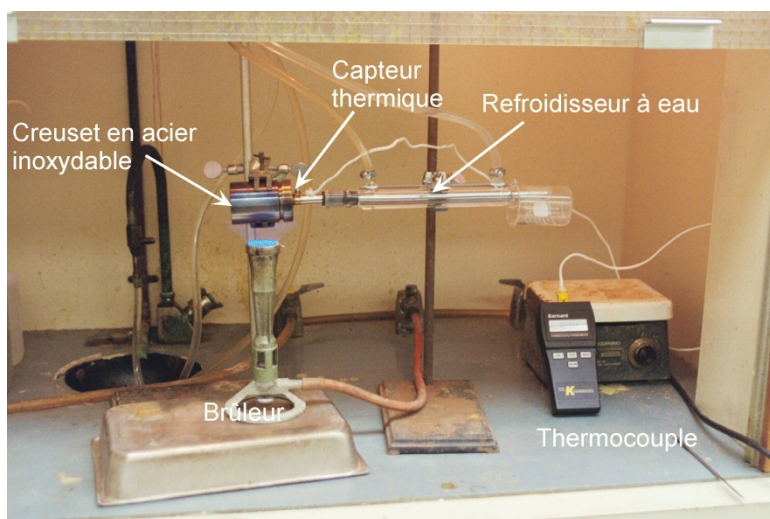


Project 2001-9: Testing of a process for extracting titanium from ilmenite

The findings of project 2000-5 showed that improved processing of ilmenite ore would be a major benefit, if not a prerequisite for the economic viability of ilmenite deposits found in Grenvillian anorthosite complexes. A theoretical method for the extraction of titanium metal directly from an ilmenite concentrate was developed. In the present project, we propose to validate the approach based on consultation with some external experts and to test in laboratory the fundamentals of the process. Here, the experimental protocol described in the first phase will be applied in this second phase.

The ore used to test the titanium extraction procedure came from the Mirepoix property belonging to Ressources d'Arianne. An ilmenite concentrate was prepared in the laboratory from massive ilmenite ore. Two chemical reactions of the extraction process were tested by varying different experimental parameters (reaction time, solvent, concentrate and other additives amounts, temperature, etc.) to optimise titanium recovery. The experiments were carried out in two phases; analytical problems encountered in the first phase were tried to be corrected during the second.



Assembly details for TiF₄ extraction (produced by attacking the ilmenite concentrate with F) by sublimation using a stainless steel crucible.

Results have shown that it is possible to have good titanium metal recovery using this experimental procedure and that the approach is realistic. However, experimental parameters have a great influence on the method's effectiveness which must be well defined and controlled. At the same time, consultations were carried out to validate the process. To this effect, the method was presented to outside firms and a patentability study was carried out. The conclusions of the consultative process have confirmed the innovative aspect of the method.

Summary: Project 2001-9	
Objectives	<ul style="list-style-type: none"> To validate the process implemented in phase 1 (Project 2000-5). To advance the project in order to pass it on to the metallurgical sector. To determine the sensitivity of the parameters influencing the chemical reactions of titanium metal extraction from ilmenite.
Results	<ul style="list-style-type: none"> Process for efficient and viable extraction; Patentability study carried out.
Tools and Innovations	<ul style="list-style-type: none"> New titanium extraction process.