First of all, a considerable number of Alpine monazite specimens (both from fissures and pegmatites) have been investigated. Here, the most remarkable point is the discovery of varieties very rich in uranium or/and thorium; the unit cell data are practically invariant over a wide range of composition.

Alpine xenotime has also been investigated; here, depending on the occurrence, different REE distributions may occur; the most interesting point is the presence of non-negligible amounts of uranium, generally higher than for monazite.

Besides monazite and xenotime, a systematic investigation on the parisite and gadolinite group has also been carried out.

METABASITES IN THE BASEMENT UNITS OF THE WESTERN ALPS

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Metabasics found in the pre-Alpine crystalline sequences of the Western Alps are briefly reviewed. In the internal units, metabasics of the "ancient" basement, banded amphibolites and boudinaged layers, are mostly Ti-rich tholeiites. Their amphibolite facies metamorphism, which post-dated an eclogite phase, may be considered as Cambro-Ordovician or earlier in age. A "younger" basement type, possibly of Upper Ordovician-Silurian age, contains high-Ti tholeiitic basic sills and low-Ti basic magmatic rocks. The possible grade of the Variscan metamorphism in these internal units ranges from nil to low.

The external crystalline massifs contain banded amphibolites, one ophiolite sequence, a plutonic-volcanic complex and various other metabasic bodies. Eclogite relics are found. The protolith ages range from late Proterozoic to Devonian. The original tectonic environments are heterogeneous. Both back-arc and intracontinental magmatisms are proposed to be present.

Attention is drawn to difficulties in interpreting geochronological data, in which the leading part is played by high heat flow periods (e.g. Permian) and tectonic events (e.g. detachment of pieces of lower crust in eclogite or granulite facies).
Comparisons are suggested of 1) the external crystalline with the Tauern crystalline sequences (accreted to Europe in Variscan times), and 2) the Penninic and Austro-Alpine of the Western Alps with the Middle und Upper Austro-Alpine of the Eastern Alps (belonging to Gondwana up to Alpine times).

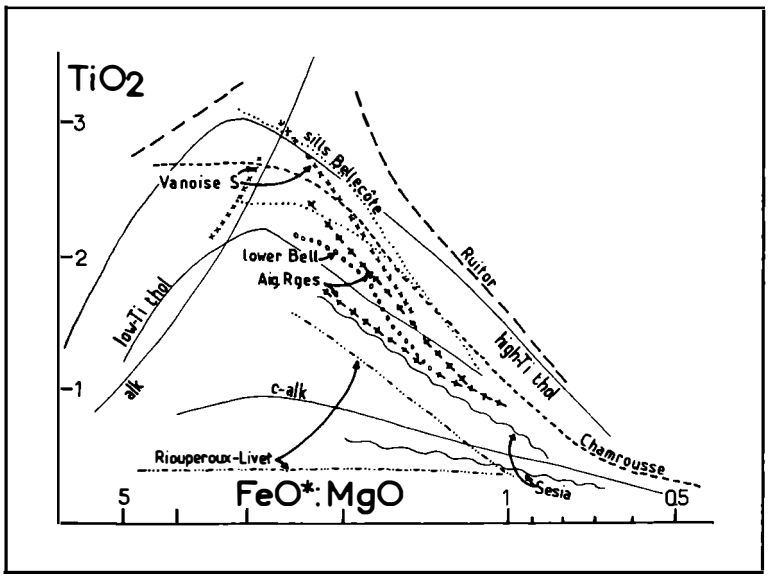

Fig. 1: TiO_2-FeO:MgO diagram for metabasites from the Penninic ancient basement (Ruitor and southern Vanoise massifs), the Penninic younger basement (sills and lower unit in the Bellecôte-Pourri massif), Austro-Alpine basement (Sesia) and the external crystalline massifs (Aiguilles Rouges-Pelvoux-Argentera, Chamrousse ophiolite and Riouperoux-Livet body).*

DER RECKNER-SERPENTINIT UND SEINE RANDGESTEINE

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Der Reckner-Serpentinit, dessen tektonische Lage von den meisten Autoren (z.B. TOLLMANN, 1977) als unterostalpin angesehen wird, befindet sich am Südrand der Tuxer Voralpen in den Tarntaler Bergen (Tirol). Er besteht zum größten Teil aus serpentinisiertem Lherzolit mit nur untergeordneten Vorkommen von Harzburgit und exotischen ultramafischen Kumulaten. Weiters wurden zwei winzige Vorkommen von Plag-Cpx-Gabbro und monomineralischen Chloritfelsen gefunden. Der Ultramafitit wird randlich von einem schmalen Gürtel aus Ophikarbonatgesteinen begleitet, es überwiegen Ophicalcite, selten sind Dolomit-Talk-Ophikarbonate. Generell weisen die Ophikarbonate eine starke tektonische Überprägung auf. Als interessantestes Serpentinitrandgestein ist ein meist nur wenige Meter mächtiger Horizont aus "Blauschiefern" zu nennen, der an den als Obermalm eingestuften Radiolarit grenzt.

Die Ultramafitite stellen großteils Cpx-Spinell-Lherzolite dar, deren Cpx gut erhalten