BULLETIN DE L'ASSOCIATION MINÉRALOGIQUE DU CANADA

THE CANADIAN MINERALOGIST

JOURNAL OF THE MINERALOGICAL ASSOCIATION OF CANADA

Volume 36 December 1998 Part 6

The Canadian Mineralogist
Vol. 36, pp. 1395 (1998)

XRD AND ELECTRON-MICROSCOPY INVESTIGATIONS OF LAYER SILICATES

PREFACE

In 1997, the 11th International Clay Conference was held in Canada for the first time. The Mineralogical Association of Canada acted as one of the official sponsors of this major meeting. In that context, my colleague Hoyatollah Vali and I volunteered to organize a one-day special session of the power of a combined XRD – TEM approach in the study of layer silicates. Contributors were also asked to provide a summary of their presentation for the Conference Proceedings volume. I sensed that some speakers would be frustrated if they were limited to an extended abstract of their contribution. For example, how could they hope to present SEM, TEM and XRD documentation needed to make their point with the space limitations imposed on them?

Thus there emerged in my mind the concept of a thematic issue of *The Canadian Mineralogist*, which you now have before you. In consultation with guest Associate Editor H. Vali, I decided to translate the idea of "sponsorship" of a major conference into something tangible. Furthermore, I decided to extend an invitation to other possible contributors who, for one reason or another, were unable to attend the Ottawa meeting.

One plenary conference at the 11th International Clay Conference focused on the concept of fundamental particles. The development and merits of the concept were presented by its originator, Dr. Paul Nadeau. However, in the opinion of some attendees, there was insufficient discussion of this theme in Ottawa. Our issue thus starts off with a thought-provoking essay by Dr. Donald R. Peacor on the merits of the concept of fundamental particles, and in particular on the implications of TEM data accumulated since the concept was first described in print fifteen years ago. There are still many lingering questions concerning the meaning and implications of "fundamental particles". It was my wish to use this open forum for a healthy discussion of some divergences of opinion concerning this important concept. Dr. Peacor's discussion is followed by a reply by Dr. Nadeau, and another by Drs. F. Nieto and J. Cuadros.

The rest of the issue contains articles that address the theme "XRD and Electron-Microscopy Investigations of Layer Silicates". Some of these articles focus on the complicated issues raised in the discussion and replies about fundamental particles. Just what is interstratified illite-smectite? Just what is measured by X-ray diffraction and transmission electron microscopy once the sample preparation for those techniques is done? Also included are papers on chlorite, lizardite, antigorite, and kaolinite. The last paper focusses on a geographically relevant issue, the mineralogy and consequent geotechnical behavior of Champlain clay-bearing clastic sediments of Pleistocene age, subject to major landslides in the St. Lawrence Lowlands of easternmost Ontario and Quebec.

I take this opportunity to thank the authors for their cooperation and willingness to contribute to this thematic issue and to *The Canadian Mineralogist*. I acknowledge the help of Hoyatollah Vali, and of the many referees who volunteered their time and effort to provide authors with suggestions on how best to increase the impact of their contributions, and thus, ultimately, to make this a better thematic issue.

Robert F. Martin
Department of Earth and Planetary Sciences, McGill University
editor, *The Canadian Mineralogist*