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PETROLOGY OF DIAMOND-BEARING ROCKS.

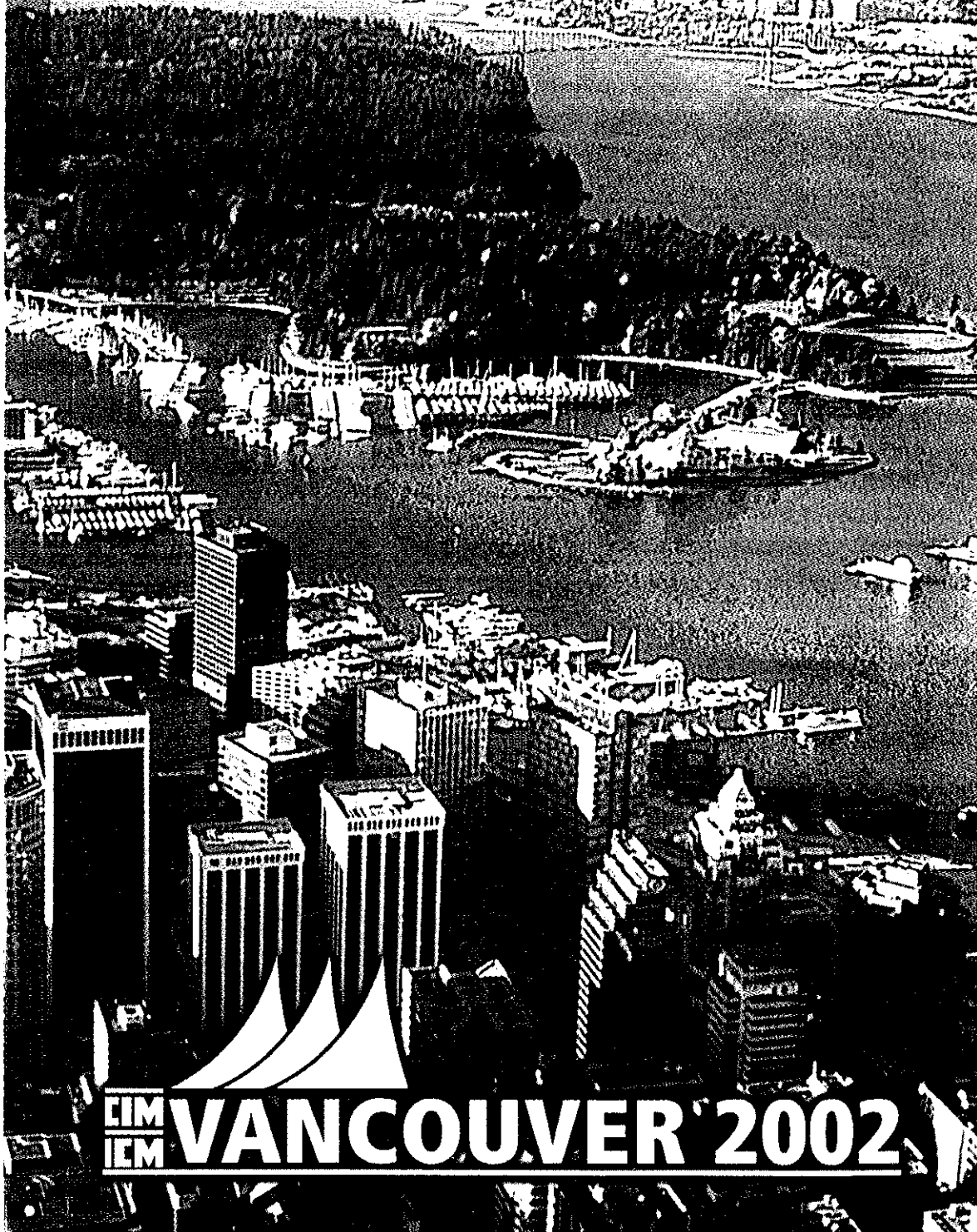
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Although diamonds occur in a variety of natural rocks, this paper focusses on primary magmatic sources. Group 1 and 2 kimberlites and lamproites are the only primary host rocks to be mined and, together, they constitute a major part of the world's diamond production. The contrasting characteristics of these rock types have important implications in exploration. So far in Canada, however, all significantly diamondiferous rocks are kimberlites. Other petrogenetically distinct rock types have been encountered during exploration and some are diamond-bearing. A consequence of these discoveries is to question whether these rock types are potentially economic. Petrology deals with the origin, occurrence, structure, and history of rocks. Genetic rock classifications, or the meaningful categorization of rocks, and the investigation of emplacement processes, or volcanology, are particularly relevant to the search for diamonds. Kimberlites are challenging to understand and petrological studies are essential. Such investigations, however, are not straightforward. Multiple lines of evidence are required to develop viable geological models which ultimately form the basis of exploration, early and advanced evaluation or mining programs. Many of the geological models for Canada are significantly different from the 'classic' models based on southern African kimberlites. Case studies will illustrate the use of petrology and the importance of the contrasting models.

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