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State of the Art of Carbonatites and Their Potential for Critical-Metal Deposits

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Message from the Guest Editor

Population growth and technological progress in the last 50 years have resulted in a 400% increase of global demand for mineral resources. Unprecedented market growth is particularly expected for critical raw materials (CRMs). This is boosting mineral exploration for carbonatites, which are one of the major sources of CRMs. Among CRMs are several chemical elements essential to high-tech and green-tech applications. Rare Earth elements (REEs) are among the most important of these, even though REEs are ubiquitous in modern technologies. CRMs are typically associated with the sub-volcanic parts of the carbonatite system. In many cases, these sections are poorly exposed, but surficial indicators suggest their potential as CRM resources, new mineral exploration at sub-surficial depths is realistic.

Although a general model for carbonatites exists, data on the vertical extent of hosted ores are still lacking. Late hydrothermal activity in and around the magma chamber is known to be key in concentrating CRMs, thereby demanding more detailed mineralogical, microtextural, and geochemical characterization using the new mineral system-oriented approach.

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Message from the Editor-in-Chief

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