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COSTA RICA JOINS THE INTERNATIONAL MINERALOGICAL ASSOCIATION: EXPANDING THE GEOGRAPHICAL SCOPE OF THE GLOBAL MINERALOGICAL COMMUNITY

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Costa Rica is a small country (51,179 km²) located in Central America. Geologically, it is relatively young, with the oldest rocks dating back only to 200 million years (Middle Jurassic). However, most rocks are less than 120 million years old, with some being as young as a few years due to active volcanism. Tectonically, the country is bounded by the subduction of the Cocos plate under the Caribbean plate and the Panama microplate. Given its geological youth, mineral deposits are not abundant, and the mining tradition is limited. Despite this, several types of deposits are notable:

- Manganese nodule deposits in oceanic basement rocks (ophiolites *s.l.* of the Nicoya Peninsula), commercially exploited during and after the First World War.
- Cyprus-type copper deposits in oceanic basement rocks (ophiolites *s.l.* of the Nicoya Peninsula).
- Chromite deposits associated with serpentinized peridotite (ophiolites *s.l.* of Santa Elena).
- Polymetallic copper-lead-zinc deposits, particularly present in Lower Miocene volcanic and volcaniclastic rocks.
- Porphyritic copper deposits associated with Upper Miocene intrusive bodies.
- Low-sulfidation epithermal gold deposits associated with Neogene volcanism.
- Alluvial gold deposits associated with Pliocene–Pleistocene sediments, sourced from ancient oceanic basement volcanism (ophiolites *s.l.* of Osa-Punta Burica and Golfito).
- Pleistocene bauxitic laterite deposits.
- Native sulfur related to Late Quaternary extinct and active volcanoes.

Metallic gold and copper mining in Costa Rica began approximately 1,700 years ago with the Amerindians, prior to the Spanish conquest and colonization. However, colonial mining in the 17th and 18th centuries was very artisanal until the first epithermal gold findings were technically exploited in 1821. These studies of economic geology and mining activities led to the arrival of foreign geologists (from the USA, England, Germany, Switzerland), who described the first minerals associated with economically significant metallic deposits, as well as those present in igneous and sedimentary rocks. With the establishment of the *Direction of Geology, Mines and Oil* (*Dirección de Geología, Minas y Petróleo*) in 1960 and the Central American School of Geology (*Escuela Centroamericana de Geología*) in 1969, Costa Rican professionals began to investigate more into petrography, mineralogy, and economical deposits, including specialized courses.

Several peculiarities, aside from the previously described deposits, make Costa Rica an interesting country for investigating mineralogical aspects: a) the existence of hyperacidic crater brines lakes in active volcanoes, current examples of high-sulfidation environments, including sulfur small cones, sulfur pahoehoe flows, and sulfur pools; b) the existence of the *Cueva de los Minerales*, the volcanic cave with the most diverse variety of minerals in the world; c) the second-known occurrence worldwide of the zeolite tschernichite; d) a great variety of quartz in its most diverse crystalline forms and colors, including blue chalcedony; and e) a wide variety of minerals in igneous alkaline, calc-alkaline, and tholeiitic rocks.

The recent creation of a Mineralogy Commission within the College of Geologists of Costa Rica will enable further advancements in mineralogy through specific research and discussion panels, working alongside mining and economical geologists and in archaeometallurgy investigations. Several studies are currently underway, with initial results expected in 2025.

For the College of Geologists of Costa Rica, through its Mineralogy Commission, it is a true honor to belong to the IMA, with the expectation of strengthening research ties and inviting colleagues from other entities to collaborate.

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