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Kaarel Mänd , Leslie J. Robbins , Noah J. Planavsky , Andrey Bekker , Kurt O. Konhauser
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IRON FORMATIONS AS PALAEOENVIRONMENTAL ARCHIVES

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Abstract: Ancient iron formations – iron- and silica-rich chemical sedimentary rocks that formed throughout the Precambrian aeons – provide a significant part of the evidence for the modern scientific understanding of palaeoenvironmental conditions in Archaean (4.0–2.5 billion years ago) and Proterozoic (2.5–0.539 billion years ago) times. Despite controversies regarding their formation mechanisms, iron formations are a testament to the influence of the Precambrian biosphere on early ocean chemistry. As many iron formations are pure chemical sediments that reflect the composition of the waters from which they precipitated, they can also serve as nuanced geochemical archives for the study of ancient marine temperatures, redox states, and elemental cycling if proper care is taken to understand their sedimentological context.

Keywords: iron formations, palaeotemperature, redox, Archaean, Palaeoproterozoic

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