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# Beyond the Decoration; Mineralogical and Micro-structural Study of the Bronze Age "Life Cycle Jar Pottery" from Keshik Cemetery, Sistan and Balouchistan, Iran

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## Résumé

The present study focuses on a unique type of pottery, the so-called Life Cycle Jar, in association with 8 more sherds, which were discovered in the Keshik cemetery (3rd Millennium BC). The samples were investigated through classical analytical methods, such as thin-section petrography, XRPD and SEM-EDX in order to identify the production techniques, the structure, the surface finishing and the pigments used for the decoration. Mineralogical-chemical investigations revealed that the discriminating factors between the various potteries were significant from the technical point of view. The "Life Cycle Jar" sample shows the characteristics of wheel-thrown vessels with a definite orientation of pores in the thin section. Most investigated ceramics can be defined as being low-fired (ca. 750°C), as indicated by the occurrences of inclusions in form of calcite within the matrix of the potteries. The other samples can be defined high-fired sherds (ca. 900°C-1000°C) and are characterized by the red and green color of the matrix. The microstructural characteristics of the potteries showed both low-fired and pre-sintering textures. The analysis of the pigments applied as decoration motives on the surface of the painted Life Cycle Jar Pottery, showed that the pigments consist of iron oxide-based minerals in the case of the red-orange color (like maghemite and hematite), and favorable manganese oxide in the case of the brown-black pigments on the vessels.

**Mots-Clés:** Ancient pottery, Life Cycle Jar, petrography, XRPD, SEM, EDX, Keshik cemetery, Bronze Age, Sistan, Balouchistan.

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