

A new mineral-like phase from El Dorado, Nomansland, its properties and formation

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Grey, metallic, isometric grains of a new phase, 0.1–0.5 μm in size, were found during a remediation project at the ancient gold refining plants of El Dorado, Nomansland. The new phase contains elemental iodine in the middle of a clathrate-like structure consisting of 2010 mercuraurum atoms. The problems in the evaluation of the X-ray films caused by the very large unit cell (Table 1) were solved by a new method [1] based on the application of an AFM.

Table 1: Cell values of the new phase (*Fm3m*)

	(1)	(2)
<i>a</i> (Å)	98.53	99.16
<i>V</i> (Å ³)	956,545.1	975,011.1

(1) From single crystal data, (2) from powder data

Mercuraurum (MA) was recently found here in the native state [2]. This new chemical element occupies an interstitial position in the periodic table between mercury and gold, and it is the only element that has a non-integer atomic number (79.5) and a two-letter chemical symbol written in full caps.

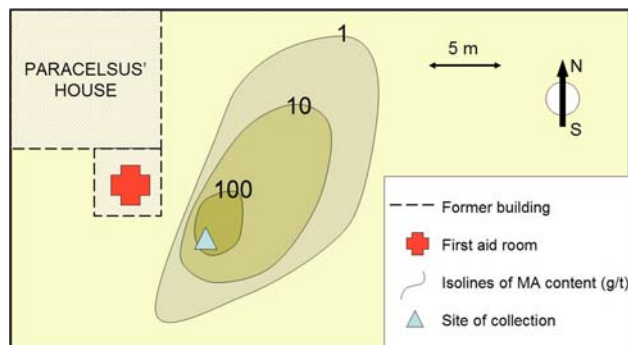


Fig. 1: Sketch map of the occurrence at the former El Dorado gold refining plant (atype locality).

The unnamed phase with the formula of IMA₂₀₁₀ was found in the area of the former office buildings (Fig. 1). The highest concentrations were observed near the refuse ground close to the first aid room. The phase obviously formed during the interaction of spilt tincture of iodine (used for the treatment of the wounds of the workers) with the mercuraurum-containing refuse material. A joint geochemical and archeological study suggests that the mercuraurum content of the refuse may be related to transmutation experiments of Paracelsus, who worked here as a physician in the 16th c. The outstanding alchemist was allured here by the easy access to mercury used for the amalgamation process of gold extraction. This conclusion is supported by a historical study [3] that reported extremely high injury rates among the workers in this period, presumably due to Paracelsus' part-time job as a sales representative for the local brewery.

The new species will not be submitted for approval to the IMA CNMNC due to the indisputable human intervention in its formation.

[1] Hoaxmann, J.F. (2010) in Ray, X. (ed.) *X-, Y- and Z-ray crystallography*. Outof Press, Old York, 23-29. [2] Schwindler, O.K. et al. (2010) *Alchem. Scripta*, **66**, 1-22. [3] Obmanov, Yu.K. & Trompeur, F. (1989) *Past of gold mining in Nomansland*. Bargain Books, El Dorado.

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