

## Press release

# **Metalor and the University of Lausanne unveil a ground-breaking “Geoforensic Passport” to validate the origin of every gold doré**

Assessing the “DNA” of gold doré with a scientific validated tool represents a major step forward in the traceability of mined gold and to detect possible manipulations of the origin of gold doré

Neuchâtel, Switzerland / London, March 16, 2021 - Metalor Technologies SA, a leading Swiss-based supplier of precious metals and advanced materials, together with the University of Lausanne unveiled today at the LBMA Ninth Assaying and Refining Conference a “Geoforensic Passport”, a brand new scientific approach which allows validating the origin of doré received at refineries. This new tool represents a real breakthrough as one will be able to systematically analyze the DNA of every gold doré, determine if its origin corresponds to its stated source, but also to detect any inconsistencies or identify gold of dubious origin. This approach is now routinely used at Metalor Technologies to scientifically confirm the origin of the doré received at its refinery.

*“Responsible sourcing programs for precious metals have developed massively over the last decade, emanating from associations like LBMA, from private and public organizations (RJC, BGI...) as well as from many refiners themselves. All those initiatives have one fundamental flaw: they rely on compliance, audits, local government, in an environment that is not corruption-free,” said Dr Barbara Beck, from the University of Lausanne and co-author of the publication with Dr Jonathan J. Jodry, from Metalor Technologies. “With the geoforensic passport, the doré is analyzed at reception at the refinery, hence being totally immune from any local interference and any subjective paper trail.”*

*“The geoforensic passport is a very robust tool to identify manipulation of the doré and ensure that no gold of dubious or questionable origin enters a refinery adhering to strict principles in terms of corporate and social responsibility. It is actually a major step to solve the issue of tracability of gold,” added, Dr Jonathan J. Jodry, Head of Laboratories & New Business Development at Metalor Technologies. “One particularity of this method is that the geoforensic signature, or doré’s DNA, is updated over time to reflect the variations found in doré’s shipment - for example because a new pit is open, or because the gold is mined deeper. This allows the method to be extremely sensitive to unexpected and small changes. The geoforensic passport represents a new paradigm in gold origin determination.”*

### **An effective, fast and low cost method**

The process to create a “geoforensic passport” for every mined gold source is a two-step method resulting for a given customer in a complex “signature”, i.e. a set of information built in a multi-dimensional space with anything from 9 to 15 dimensions. A geoforensic passport will allow to identify which materials are coming from larger, well-defined mining operations, which ones are from smaller, likely artisanal/semi-industrial mining and which ones are not understood and represent a potential risk.

The level 1 analysis is performed quickly at the refinery with readily available equipment, measuring, on doré materials, 20 elements of interest and comparing them with an existing database. This first level, confirms the identity of more than 90% of the materials. It is relatively inexpensive and does not require any specific infrastructure or additional material. The level 2, compares the isotopic signature of the samples with another database, allowing the validation of more shipments. It does however require highly advanced technical knowledge and uses expensive equipment.

The geoforensic passport relies on two databases of nearly 10'000 analyses developed by Metalor Technologies. Those databases are dynamically updated at the refinery – every sample measured is added to the databases once validated.

This approach was tested, for example, on 100 samples received from South America. 98 samples were correctly assigned to the country and mine of origin. Only 1 result was inconclusive and escalated to Level 2 analysis. The last sample was coming from Asia and willingly mislabeled for the study. Although the composition was extremely similar to that of the South America mine it was assigned to, it was immediately detected as a problem by the system.

*“Keeping inappropriate sources of gold out of the system has to be a priority for our industry, as this goes in sync and is closely linked with the necessity to improve the working conditions of artisanal miners by bringing them into the legal economy. Supporting ASM formalization processes and innovative pilot projects such as the one announced in June 2020 between Minera Yanaquihua S.A.C., the Swiss Better Gold Association and Metalor, is one way to proceed. The development of this geoforensic passport represents a major breakthrough to implement a more sustainable gold value chain,”* said Antoine de Montmollin, CEO of Metalor Technologies.

*“Metalor has always had a clear objective of continuously improving its standards in terms of responsible sourcing and compliance. Today we are very happy to bring this cause one step further,”* Mr de Montmollin concluded.

This geoforensic passport was initiated and supported by Metalor and the University of Lausanne, and was co-funded by the Swiss government through the Innosuisse funds.

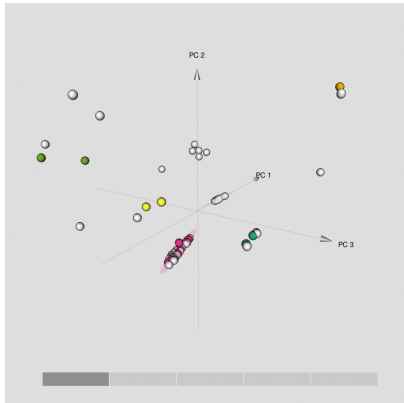
### **About Metalor Technologies SA**

Metalor Technologies SA. is a world supplier of precious metals and advanced materials. The company uses Swiss precision technology to develop high purity metals, products and solutions which are used in a large number of applications across many industries.

The company was founded in the Canton of Neuchatel in 1852 by Martin de Pury as a company specialized in the melting of gold and the manufacture of watch cases. Today, Metalor is part of the Tanaka Precious Metals Group, a world leader in precious metals applications since 1885.

Metalor recorded revenues of more than CHF 300 million in 2020, divided equally among its three business groups: Metalor Refining, Metalor Advanced Coatings and Metalor Electrotechnics. Headquartered in Neuchatel, the Group has 17 subsidiaries and operates refineries in Europe, USA and in Asia. It employs 1,500 people worldwide, of which 280 in Switzerland.

## Geoforensic Passport – the DNA of doré



### A new paradigm in gold origin determination

- A complex signature of a given customer
- Segregated in several subgroups (a mine, a pit, a geological sub-area)
- Adapting overtime to take into account natural & process variations

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