



**For immediate release**

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### **Metalysis Awarded European Space Agency Development Contract for its FFC Process**

Metalysis, the end to end manufacturer of premium, solid-state metal and alloy powders, has been awarded European Space Agency (ESA) funding, contract number 4000131940, for its project titled, “The Metalysis FFC Process for Extra-Terrestrial Oxygen Production from ISRU,” which forms part of ESA’s Space Resources Strategy and carried out under the General Support Technology Programme of, and funded by, the European Space Agency.



The Metalysis process has recently been proven for the industrial-scale production of metals and alloys, leading to the present investigation into the potential application of this process to regolith-like materials in a lunar context. An initial proof of concept study has resulted in a metallic powder where 96% of the total oxygen is successfully extracted, in conjunction with giving a mixed metal alloy product that can be used for in-situ manufacturing.

The project will provide an assessment to prepare and de-risk technology developments, focussed towards oxygen production for propellants and life support consumables. The ability to extract oxygen on the moon is vital for future exploration and habitation, being essential for sustainable long duration activities in space. In-Situ Resource Utilisation (ISRU) will significantly reduce the payload mass that would be needed to be launched from earth.

A previous NASA-funded study, undertaken in 2004, investigated the applicability of the FFC-Cambridge process for the electrolysis of lunar ilmenite, termed the Ilmenox process. At the time of this previous work, the development of the FFC-Cambridge process was still in its early stages and had only been proven at a laboratory scale.

Since this time, Metalysis has successfully scaled-up its technology, with a further three generations designed, commissioned, and in operation. As of 2018, titanium and tantalum metal production has been developed at an industrial scale, and the production of many other metals and alloys has also been proven. More recently, the production of intermetallics of aluminium and scandium has been increased to industrial scale.

The ESA Space Resources Strategy has been a driving force for the project. The report highlights that market revenues of €73-€170B are expected from space resources from 2018-2045, supporting 845 thousand to 1.8 million full-time employee years. Potential exploration cost savings (or equivalent cost of activities that would otherwise not have been undertaken) to end-users are estimated to be €54-€135B.

Under the E3P programme, ESA aims to secure Europe's central role in global space exploration, delivering new results in both basic and applied science, offering a compelling vision of global endeavour, enriching society and inspiring the next generations.

Working alongside Metalysis, Added Value Solutions (AVS) will work to determine the steps required to translate the Metalysis technology from an on-earth to extra-terrestrial environment.

**Speaking about the project, Ian Mellor, Managing Director at Metalysis, said:** *"We are really pleased Metalysis is involved in this exciting programme; taking an established earth-based technology and applying it to a lunar setting. The fact that the process is capable of simultaneously producing both oxygen and metal powders is unique, offering potential solutions to two key areas of the ESA Space Resources Strategy."*

**Sue Horne, Head of Space Exploration at the UK Space Agency, said:** *"In the future, if we want to travel extensively in space and set up bases on the Moon and Mars, then we will need to make or find the things required to support life - food, water and breathable air."*

*"The involvement of Metalysis in a programme that aims to do just that, by producing oxygen on a lunar setting, will showcase the UK's space credentials on the world-stage and help unlock breakthroughs that bring future space exploration a step closer."*

Disclaimer: The views expressed in this publication can be in no way be taken to reflect the official opinion of the European Space Agency.

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**Associated images:**

A Hi-res copy of the image is available on request.  
Image caption "View of the Moon Limb with Earth Rising on the Horizon". Royalty free Shutterstock stock photo ID: 1454730908.

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## **Notes to editors**

Metalysis owns a solid-state technology to produce valuable periodic table metal and alloy powders. Invented at the University of Cambridge, UK, the technology provides a more environmentally friendly, efficient process compared to traditional metal production methods.

With commercial partners in industry and academia, Metalysis uses its process to produce powders primarily used in 3D printing, aerospace and automotive advanced manufacturing applications.

The Company is carrying out its Generation 4 ("Gen 4") technological expansion. Being modular, Gen 4 can be scaled, which will produce hundreds of tonnes per annum of valuable speciality metal and alloy powders.

For more information

[www.Metalysis.com](http://www.Metalysis.com)

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