Production of Scandium compounds and Scandium Aluminum alloys from European metallurgical by-products

Fact Sheet

Project Information

SCALE
Grant agreement ID: 730105

Project website

Status
Ongoing project

Funded under H2020-EU.3.5.3.

Overall budget € 7 706 625

EU contribution € 7 000 000

Coordinated by MYTILINAIOS ANONIMI ETAIREIA

Greece

Start date 1 December 2016

End date 30 November 2020

Objective

Scandium (Sc) is one of the highest valued elements in the periodic table and an element which is usually grouped in REEs as it shares many characteristics with Yttrium. Scandium technological applications are unique, as it is a key component in producing Solid Oxide Fuel Cells (Scandia-Stabilized-Zirconia solid electrolyte layer) or high strength Aluminum alloys used in aerospace and 3D printing applications (SCALMALLOY®). Yet Scandium supply is limited due to its scarcity and the high cost of its production, which currently takes place in Asia and Russia.

Europe has no production of Scandium, but is home to many Sc industrial end-users (Airbus, II-VI, KBM Affilips and others). In fact end-users like Airbus, are not deploying their Sc applications due to the lack of a secure Sc supply. The SCALE project sets about to develop and secure a European Sc supply chain through the development of technological innovations which will allow the extraction of Sc from European industrial residues.
European industrial residues. Bauxite residues from alumina production (5 Million tons on dry basis per year in Europe) and acid wastes from TiO2 pigment production (1.4 Million tons on dry basis per year in Europe) have Sc concentrations which are considered exploitable, given a viable extraction technology. SCALE develops and demonstrates the value chain starting from residue and finishing to high tech end-product. In more detail:
• SCALE develops innovative technologies that can extract economically and sustainably Sc from dilute mediums (<100 mg/L) and upgrade them to pure oxides, metals and alloys at lower energy or material cost.
• SCALE extracts along with Sc all other REEs found in the by-products (AoG’s BR on an annual base contain 10% of the European REE raw material imports)

The industrially driven SCALE consortium covers the entire Sc value chain with 7 major European industries and further features 8 academic and research institutes and 4 engineering companies with track records in RTD.

Field of science

/natural sciences/chemical sciences/inorganic chemistry/inorganic compounds
/engineering and technology/environmental engineering/energy and fuels/fuel cell
/natural sciences/chemical sciences/inorganic chemistry/metals

Programme(s)

Topic(s)

Call for proposal

H2020-SC5-2016-OneStageB

Funding Scheme

RIA - Research and Innovation action

Coordinators

MYTILINAIOS ANONIMI ETAIREIA

Address
Artemidos 8
15125 Marousi
Greece

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

EU contribution
€ 1 000 750
### ALOUMINION TIS ELLADOS VIOMICCHANIKI KAI EMPORIKI ANONYMOS ETAIREIA VEAЕ

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### Participants (18)

#### II-VI GMBH

- **Germany**
- **EU contribution**: € 737 500

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#### NATIONAL TECHNICAL UNIVERSITY OF ATHENS - NTUA

- **Greece**
- **EU contribution**: € 761 000

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#### RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN

- **Germany**
- **EU contribution**: € 516 875
Templergraben 55
52062 Aachen
Higher or Secondary Education Establishments
Website [Contact the organisation]

KUNGLIGA TEKNISKA HOEGSKOLAN
Sweden
EU contribution
€ 383 125
Address
Brinellvagen 8
100 44 Stockholm
Activity type
Higher or Secondary Education Establishments
Website [Contact the organisation]

BUDAPESTI MUSZAKI ES GAZDASAGTUDOMANYI EGYETEM
Hungary
EU contribution
€ 200 000
Address
Muegyetem Rakpart 3
1111 Budapest
Activity type
Higher or Secondary Education Establishments
Website [Contact the organisation]

BUNDESANSTALT FUER MATERIALFORSCHUNG UND -PRUEFUNG
Germany
EU contribution
€ 303 125
Address
Unter Den Eichen 87
12205 Berlin
Activity type
Research Organisations
Website [Contact the organisation]

FACHHOCHSCHULE NORDWESTSCHWEIZ
Switzerland
EU contribution
€ 0
Address
Bahnhofstrasse 6
5210 Windisch
Activity type
Higher or Secondary Education Establishments
Website [Contact the organisation]
FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.

Germany

EU contribution

€ 301 250

Address
Hansastraasse 27C
80686 Munchen

Activity type
Research Organisations

Website
Contact the organisation

MEAB CHEMIE TECHNIK GMBH

Germany

EU contribution

€ 721 500

Address
Dennewartstrasse 25
52068 Aachen

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Website
Contact the organisation

STIFTELSEN SINTEF

Norway

EU contribution

€ 131 673,75

Address
Strindveien 4
7034 Trondheim

Activity type
Research Organisations

Website
Contact the organisation

IOLITEC IONIC LIQUIDS TECHNOLOGIES GMBH

Germany

EU contribution

€ 225 000

Address
Salzstrasse 184
74076 Heilbronn

Activity type
Private for-profit entities
(excluding Higher or Secondary Education)
KBM MASTER ALLOYS BV

Netherlands

EU contribution

€ 209 250

Address

Kloosterlaan 2
9936 TE Farsum

Activity type

Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Contact the organisation

LESS COMMON METALS LIMITED

United Kingdom

EU contribution

€ 137 500

Address

Unit 2 Hooton Park, North Road
CH65 1BL Ellesmere Port

Activity type

Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Contact the organisation

TRONOX PIGMENTS (HOLLAND) BV

Netherlands

EU contribution

€ 70 000

Address

Professor Gerbrandyweg 2
3197 KK Rotterdam

Activity type

Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Contact the organisation

ALUMINIUM OXID STADE, GESELLSCHAFTMIT BESCHRANKTER HAFTUNG

Germany

EU contribution

€ 101 250
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<td>Cyprus</td>
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Address
Arch Makariou lli 2-4 Capital 1505 Lefkosia

Contact the organisation

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<th>WAVESTONE LUXEMBOURG SA</th>
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Address
10 Rue Du Chateau D'eau 3364 Leudelange

Website
Contact the organisation

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Address
Strindvegen 4 7034 Trondheim

Contact the organisation