



AccMet

Project ID: 263206

Funded under: [FP7-NMP](#)

Accelerated Metallurgy - the accelerated discovery of alloy formulations using combinatorial principles

From 2011-06-15 **to** 2016-06-14, closed project | [AccMet Website](#)

Project details

Total cost: EUR 18 295 937,20 EU contribution: EUR 12 250 000 Coordinated in: Norway	Topic(s): NMP-2010-4.0-3 - High throughput technologies for the development of formulated products Call for proposal: FP7-NMP-2010-LARGE-4 See other projects for this call Funding scheme: CP-IP - Large-scale integrating project
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Objective

"The core concept of Accelerated Metallurgy is to deliver an integrated pilot-scale facility for the combinatorial synthesis and testing of many thousands of unexplored alloy formulations. This facility would be the first of its kind in the world and would represent a significant advance for metallurgy. The novel technology that enables this HTT facility is based on automated, direct laser deposition (DLD). The key feature of this technology is the way in which a mixture of elemental powders is accurately and directly fed into the laser's focal point, heated by the laser beam, and deposited on a substrate in the form of a melt pool, which finally solidifies to create a unique fully-dense alloy button with precise stoichiometry. This robotic alloy synthesis is 1000 times faster than conventional manual methods. Once produced, these discrete mm-sized samples are submitted to a range of automated, standardised tests that will measure chemical, physical and mechanical properties. The vast amount of information will be recorded in a "Virtual Alloy Library" and coupled with computer codes such as neural network models, in order to extract and map out the key trends linking process, composition, structure and properties. The most promising alloy formulations will be further tested, patented and exploited by the 20 end-users. Industrial interests include: (i) new lightweight fuel-saving alloys (<4.5 g/cm³) for aerospace and automotive applications; (ii) new higher-temperature alloys (stable >1000°C) for rockets, gas turbines, jet-engines, nuclear fusion; (iii) new high-T_c superconductor alloys (>30K) that can be wire-drawn for electrical applications; (iv) new high-ZT thermoelectric alloys for converting waste heat directly into electricity; (v) new magnetic and magnetocaloric alloys for motors and refrigeration; and (vi) new phase-change alloys for high-density memory storage. The accelerated discovery of these alloy formulations will have a very high impact on society."

Related information

Result In Brief	A 'genome project' for metal alloys
Report Summaries	Final Report Summary - ACCMET (Accelerated Metallurgy - the accelerated discovery of alloy formulations using combinatorial principles) Periodic Report Summary 2 - ACCMET (Accelerated Metallurgy - the accelerated discovery of alloy formulations using combinatorial principles)

Periodic Report Summary 3 - ACCMET (Accelerated Metallurgy - the accelerated discovery of alloy formulations using combinatorial principles)

Periodic Report Summary 4 - ACCMET (Accelerated Metallurgy - the accelerated discovery of alloy formulations using combinatorial principles)

Coordinator

STIFTELSEN SINTEF
STRINDVEIEN 4
7034 TRONDHEIM
Norway

Norway

EU contribution: EUR 706 929,55

Activity type: Research Organisations

Administrative contact: Tove Lillian Hønstad

Tel.: +4798243437

Fax: +4773597043

[E-mail](#)

Participants

EUROPEAN SYNCHROTRON RADIATION FACILITY
71 AVENUE DES MARTYRS
38043 GRENOBLE
France

France

EU contribution: EUR 131 098

Activity type: Research Organisations

Administrative contact: Ian Lishman

Tel.: +33 476 882 305

Fax: +33 476 88 24 18

[E-mail](#)

INSTITUT MAX VON LAUE - PAUL LANGEVIN
71 AVENUE DES MARTYRS
38000 GRENOBLE
France

France

EU contribution: EUR 221 419

Activity type: Research Organisations

Administrative contact: Eileen Clucas

Tel.: +33 476 207677

[E-mail](#)

UNITED KINGDOM ATOMIC ENERGY AUTHORITY
CULHAM SCIENCE CENTRE
OX14 3DB ABINGDON
United Kingdom

United Kingdom

EU contribution: EUR 181 096

Activity type: Research Organisations

Administrative contact: Sergei Dudarev

Tel.: +44 1235 466513

Fax: +44 1235 466435

[E-mail](#)

AIRBUS DEFENCE AND SPACE GMBH
WILLY MESSERSCHMITT STRASSE 1
85521 OTTOBRUNN
Germany

Germany

EU contribution: EUR 329 236,20

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

Administrative contact: Werner Lang

Tel.: +49 89 60728653

Fax: +49 89 60722255

[E-mail](#)

ROLLS-ROYCE PLC
BUCKINGHAM GATE 65
SW1E 6AT LONDON
United Kingdom

United Kingdom

EU contribution: EUR 196 842

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

Administrative contact: Ian Edmonds

Tel.: +44 1332 240556

Fax: +44 1332 240395

[E-mail](#)

AVIO S.P.A.  Participation ended

Strada del Drosso 145
10135 TORINO
Italy

Italy

EU contribution: EUR 86 928,46

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

Administrative contact: Massimo Negro

Tel.: +390110084487

Fax: +390110084038

[E-mail](#)

CENTRO RICERCHE FIAT SCPA
STRADA TORINO 50
10043 ORBASSANO
Italy

Italy

EU contribution: EUR 221 498

Activity type: Research Organisations

Administrative contact: Massimo Casali

Tel.: +39 011 9083492

Fax: +39 011 9083786

[E-mail](#)

OCAS - ONDERZOEKSCENTRUM VOOR AANWENDING VAN STAAL N.V.
Pres. John Kennedylaan 3
9060 ZELZATE
Belgium

Belgium

EU contribution: EUR 138 129

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

Administrative contact: Christophe Van De Slycke

Tel.: +32 93451307

Fax: +32 93451211

[E-mail](#)

ANCHORAGE GATEWAY 5
M50 3XE SALFORD
United Kingdom

EU contribution: EUR 2 323

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

Administrative contact: Tim Wilks

Tel.: +44 161 911 1264

Fax: +44 161 911 1264

[E-mail](#)

JOHNSON MATTHEY PLC
FARRINGDON STREET 25 5TH FLOOR
EC4A 4AB LONDON
United Kingdom

United Kingdom

EU contribution: EUR 147 632

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

Administrative contact: Alan Herbert

Tel.: +44 1189 242126

Fax: +44 1189242306

[E-mail](#)

BRUKER EAS GMBH
EHRICHSTRASSE 10
63450 HANAU
Germany

Germany

EU contribution: EUR 117 760

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

Administrative contact: Olga Malachowski

Tel.: +49 6181 4384 4185

Fax: +49 6181 4384 4445

[E-mail](#)

MOLYCORP SILMET AS
KESK 2
40231 SILLAMAE
Estonia

Estonia

EU contribution: EUR 118 106

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

Administrative contact: Jane Paju

Tel.: +372 392 9137

Fax: +372 392 9154

[E-mail](#)

NORSK TITANIUM AS
SOMMERROGATEN 13-15
0255 OSLO
Norway

Norway

EU contribution: EUR 295 634

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

Administrative contact: Petter Gjorvad

Tel.: +47 974 14 000

Fax: +47 2255 7520

[E-mail](#)

TLS TECHNIK GMBH & CO. SPEZIALPULVER KG
PC STRASSE GEBAUDE 1 23
06749 BITTERFELD
Germany

Germany

EU contribution: EUR 371 542

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

Administrative contact: Norbert Ludwig

Tel.: +49 3493 72306

Fax: +49 3493 72470

[E-mail](#)

RENISHAW PLC
NEW MILLS
GL12 8JR WOTTON UNDER EDGE
United Kingdom

United Kingdom

EU contribution: EUR 799 182

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

Administrative contact: Ben Ferrar

Tel.: +44 1785 815651

Fax: +44 1785 812115

[E-mail](#)

GRANTA DESIGN LTD
CLIFTON ROAD RUSTAT HOUSE 62
CB1 7EG CAMBRIDGE
United Kingdom

United Kingdom

EU contribution: EUR 602 944

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

Administrative contact: James Goddin

Tel.: +44 1223 518895

Fax: +44 1223 506432

[E-mail](#)

avantys engineering GmbH & Co. KG
Cheruskerstrasse 3
33102 Paderborn
Germany

Germany

EU contribution: EUR 291 259

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

Administrative contact: Markus Van Wesel

Tel.: +49 5251 872 93 70

Fax: +49 5251 872 90 23

[E-mail](#)

Strategisch Initiatief Materialen
Technologiepark 935
9052 Zwijnaarde
Belgium

Belgium

EU contribution: EUR 352 876

Activity type: Research Organisations

Administrative contact: Johan Paul

Tel.: +3292645813

Fax: +3292645812

[E-mail](#)

FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
HANSASTRASSE 27C
80686 MUNCHEN
Germany

Germany

EU contribution: EUR 497 976

Activity type: Research Organisations

Administrative contact: Michael Prestele

Tel.: +49 89 1205 2738

Fax: +49 89 1205 772738

[E-mail](#)

EUROPEAN SPACE AGENCY

France

Rue Mario Nikis 8-10

75738 PARIS

France

EU contribution: EUR 1 201 406

Activity type: Research Organisations

Administrative contact: Maarten Adriaensen

Tel.: +33153698049

[E-mail](#)

DANMARKS TEKNISKE UNIVERSITET

Denmark

Oersteds plads 343

2800 Lyngby

Denmark

EU contribution: EUR 519 174

Activity type: Higher or Secondary Education Establishments

Administrative contact: Jean-Claude Grivel

Tel.: +45 46774739

Fax: +45 46775758

[E-mail](#)

UNIVERSITE DE ROUEN NORMANDIE

France

RUE THOMAS BECKET 1 MONT SAINT AIGNAN

76821 MONT SAINT AIGNAN CEDEX

France

EU contribution: EUR 371 542

Activity type: Higher or Secondary Education Establishments

Administrative contact: Monique Calvo-Dahlborg

Tel.: +33 232955336

Fax: +33 232955032

[E-mail](#)

THE UNIVERSITY OF BIRMINGHAM

United Kingdom

Edgbaston

B15 2TT BIRMINGHAM

United Kingdom

EU contribution: EUR 1 292 760

Activity type: Higher or Secondary Education Establishments

Administrative contact: May Chung

Tel.: +44 121 415 8202

Fax: +44 121 414 7468

[E-mail](#)

AKADEMIA GORNICZO-HUTNICZA IM. STANISLAWA STASZICA W KRAKOWIE
AL ADAMA MICKIEWICZA 30
30-059 KRAKOW
Poland

Poland

EU contribution: EUR 295 265

Activity type: Higher or Secondary Education Establishments

Administrative contact: Elzbieta Godlewska

Tel.: +48 12 617 2536

Fax: +48 12 617 2493

[E-mail](#)

UNIVERSITA DEGLI STUDI DI TORINO

Via Giuseppe Verdi 8

10124 TORINO

Italy

Italy

EU contribution: EUR 371 542

Activity type: Higher or Secondary Education Establishments

Administrative contact: Alessandro De Filippo

Tel.: +39 011 6707511

Fax: +39 011 6707861

[E-mail](#)

THE UNIVERSITY OF SHEFFIELD

FIRTH COURT WESTERN BANK

S10 2TN SHEFFIELD

United Kingdom

United Kingdom

EU contribution: EUR 599 354

Activity type: Higher or Secondary Education Establishments

Administrative contact: Joanne Watson

Tel.: +44 114 222 4754

Fax: +44 114 222 14752

[E-mail](#)

UNIVERSITAET ULM

HELMHOLTZSTRASSE 16

89081 ULM

Germany

Germany

EU contribution: EUR 598 879

Activity type: Higher or Secondary Education Establishments

Administrative contact: Rainer Jerg

Tel.: +49 731 50 25066

Fax: +49 731 50 25068

[E-mail](#)

CARDIFF UNIVERSITY

NEWPORT ROAD 30-36

CF24 ODE CARDIFF

United Kingdom

United Kingdom

EU contribution: EUR 371 483

Activity type: Higher or Secondary Education Establishments

Administrative contact: Nick Bodycombe

Tel.: +44 29 208 70171

Fax: +44 29 208 74189

[E-mail](#)

THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF CAMBRIDGE
TRINITY LANE THE OLD SCHOOLS
CB2 1TN CAMBRIDGE
United Kingdom

United Kingdom

EU contribution: EUR 588 968,25

Activity type: Higher or Secondary Education Establishments

Administrative contact: Renata Schaeffer

Tel.: +44 1223 333543

Fax: +44 1223 332988

[E-mail](#)

MONASH UNIVERSITY  Participation ended

Wellington Road
3800 VICTORIA
Australia

Australia

Activity type: Higher or Secondary Education Establishments

Administrative contact: Colleen Bettles

Tel.: +61 399051966

Fax: +61 399054907

[E-mail](#)

MTT TECHNOLOGIES LIMITED  Participation ended

WEST STREET CRAVEN HOUSE ARUNDELL PLACE
GU9 7EN FARNHAM
United Kingdom

United Kingdom

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

Administrative contact: Ian Mclean

Tel.: +44 1252 736297

Fax: +44 1252 726 066

[E-mail](#)

MAX PLANCK INSTITUT FUR EISENFORSCHUNG GMBH
MAX PLANCK STRASSE 1
40237 DUSSELDORF
Germany

Germany

EU contribution: EUR 119 640

Activity type: Research Organisations

Administrative contact: Richard Drabinski

Tel.: +49 211 6792 231

[E-mail](#)

GE AVIO SRL
VIA I MAGGIO 99
10040 RIVALTA DI TORINO
Italy

Italy

EU contribution: EUR 109 576,54

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

Administrative contact: Massimo Negro

Tel.: +39 011 0084487

Fax: +39 011 0084038

[E-mail](#)

Subjects

[Innovation and Technology Transfer](#)

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