



Łukasiewicz

Institute of Non-Ferrous Metals

ŁUKASIEWICZ RESEARCH NETWORK

4500 Researchers and Experts

26 Institutes located in 12 cities all over Poland

12000 Performed projects



We operate in line with
SCIENCE IS BUSINESS MODE

We work within Research Groups:

- Green Economy, Low-Carbon Economy Smart
- Smart Mobility
- Digital Transformation
- Health



ŁUKASIEWICZ RESEARCH NETWORK

INSTITUTE OF NON-FERROUS METALS

- 1952** Establishment of the Institute
- 1954** Establishment of the Division in Skawina
- 1974** Establishment of the Division in Legnica
- 2007** Incorporation of CLAiO and establishment of a Division in Poznań
- 2019** Joining Lukasiewicz Research Network



Łukasiewicz - IMN

WHAT DISTINGUISHES US?

- Highly qualified research staff
- Cooperation with the industry
- Modern research equipment
- Application-oriented research and development works, expert opinions
- Pilot installations
- Accredited laboratories
- Lines for small-scale production
- Active participation in the European Research Area



ŁUKASIEWICZ – IMN

INDUSTRIAL PARTNERS



We have about 6500 contractors from 50 countries





ŁUKASIEWICZ - IMN RESEARCH CENTRES





CENTRE OF MINERAL PROCESSING



Director of the Centre

Łukasz Skrzypiec, MSc

phone no. +48 (32) 238 06 38, mobile phone: 607 095 666

e-mail: lukasz.skrzypiec@imn.lukasiewicz.gov.pl

Areas of activity:

- R&D works in the field of development and selection of technologies for the enrichment of non-ferrous metal ores, coals, waste, and secondary materials
- evaluation and optimization of processing operations in order to improve their efficiency
- development of new and modernization of the existing processing equipment, including flotation machines, and classification and thickening hydrocyclones
- analysis of different types of raw materials in a wide grain size range
- research on the selection of reagents for the flotation of various types of mineral resources and waste materials
- analysis of the potential for the application of mechanical treatment methods in Urban Mining and Circular Economy
- expert opinions in the field of processing mineral resources, waste and secondary materials
- laboratory and semi-technical analyses of screening, crushing, grinding, gravity





CENTRE OF PYROMETALLURGY



Director of the Centre

Grzegorz Krawiec, MSc

phone no. +48 (32) 238 03 66

e-mail: grzegorz.krawiec@imn.lukasiewicz.gov.pl

Areas of activity:

- development of methods for the preparation of the charge for metallurgical processes by briquetting [with a selection of optimal types of binders], palletizing, sintering and roasting
- development of process-based design, as well as technical and technological analyses of the existing and new processes together with guidelines for their design
- development of technologies for recovery of non-ferrous metals from concentrates and from all sorts of secondary materials [technological concept, selection of equipment and conditions, basic engineering]
- development of methods for refining of non-ferrous metals from impurities
- development of methods for obtaining chemical compounds and usable alloys from semi-finished products and wastes containing non-ferrous metals
- mathematical modeling and development of algorithms for the control of metallurgical processes and decision support systems
- expert opinions and analyses of existing technologies for rationalization of energy consumption, development of the optimum method for waste heat recovery, and limitation of the negative impact of a plant on the environment





CENTRE OF HYDROELECTROMETALLURGY



Director of the Centre

Katarzyna Leszczyńska-Sejda, PhD

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e-mail: katarzyna.leszczynska-sejda@imn.lukasiewicz.gov.pl

Areas of activity:

- development of hydrometallurgical technologies for the copper industry
- recovery of strategic metals from waste in the form of high-purity compounds
- development of hydrometallurgical technologies within the performed EU-funded projects
- development of technologies enabling the increase of secondary materials content
- solvent extraction and ion exchange application in non-ferrous metals hydrometallurgy
- investigations and basic research in the field of non-ferrous metals hydrometallurgy and electrochemistry, including chemical engineering
- technical consulting and expert opinions in the field of hydrometallurgy





CENTRE OF ENVIRONMENTAL PROTECTION



Director of the Centre

Jan Mrozowski, PhD

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e-mail: jan.mrozowski@imn.lukasiewicz.gov.pl

Areas of activity:

- modern solutions in the field of Circular Economy
- recovery of metals from solid and liquid waste
- membrane technologies for desalination processes
- innovative methods of waste gases purification
- environmental and quality analyses of wastewater
- emission and control measurements of process and waste gases
- modernization of existing dedusting installations and wastewater treatment plants
- preparation of documentation necessary to obtain integrated and relevant permits





CENTRE OF ANALYTICAL CHEMISTRY



Director of the Centre

Tadeusz Gorewoda, PhD

phone no. +48 (32) 23 80 278

e-mail: tadeusz.gorewoda@imn.lukasiewicz.gov.pl

Areas of activity:

- development of analytical methods
- participation in R&D projects
- analytical services and expert opinions
- training in the field of instrumental and classical analyses
- inter-laboratory examinations
- production of calibration materials, reference materials and CRM meeting individual customer needs
- accreditation of the producer of reference materials, for compliance with the standard PN-EN ISO 17034
- Quality System in conformance with the standard PN-EN ISO/IEC 17025





CENTRE OF ADVANCED MATERIALS TECHNOLOGIES



Director of the Centre

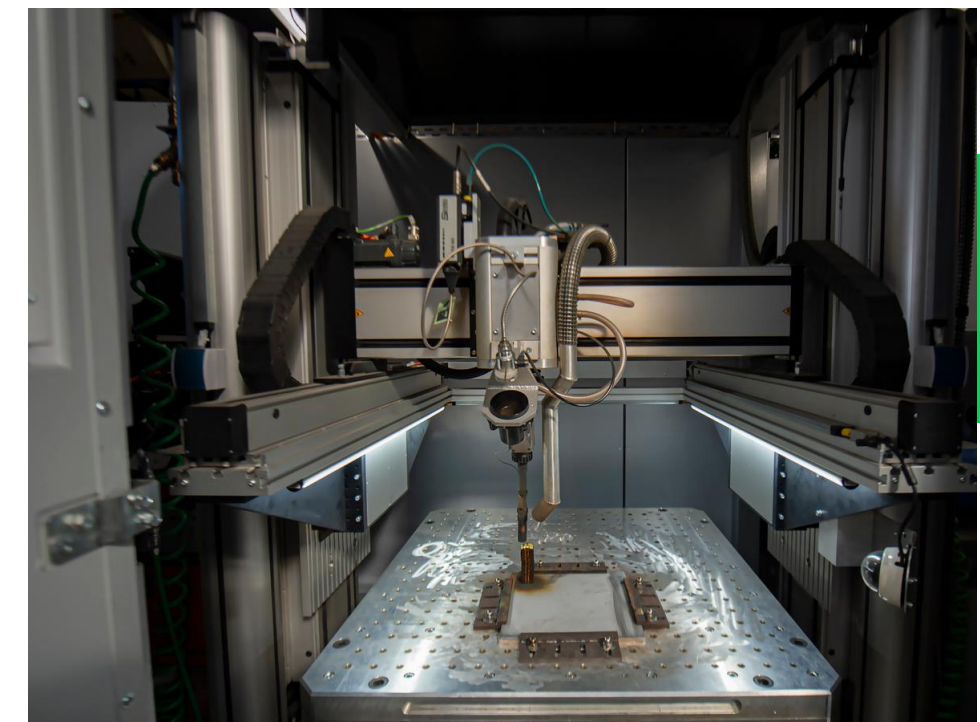
Joanna Kulasa, PhD

phone no. +48 (32) 238 07 11

e-mail: joanna.kulasa@imn.lukasiewicz.gov.pl

Areas of activity:

- complex activity in the field of development of new materials and products, as well as studies, including melting and refining technologies, casting and plastic working processes, 3D printing – WAAM technology, HIP – hot isostatic pressing, and manufacturing of composites by liquid-phase technologies
- development of 3D printing – WAAM technology
- material expert opinions on the non-ferrous metal products
- small-scale production of cast and extruded products from non-ferrous metals and their alloys, drawn products and bimetallic wires





CENTRE OF FUNCTIONAL MATERIALS



Director of the Centre

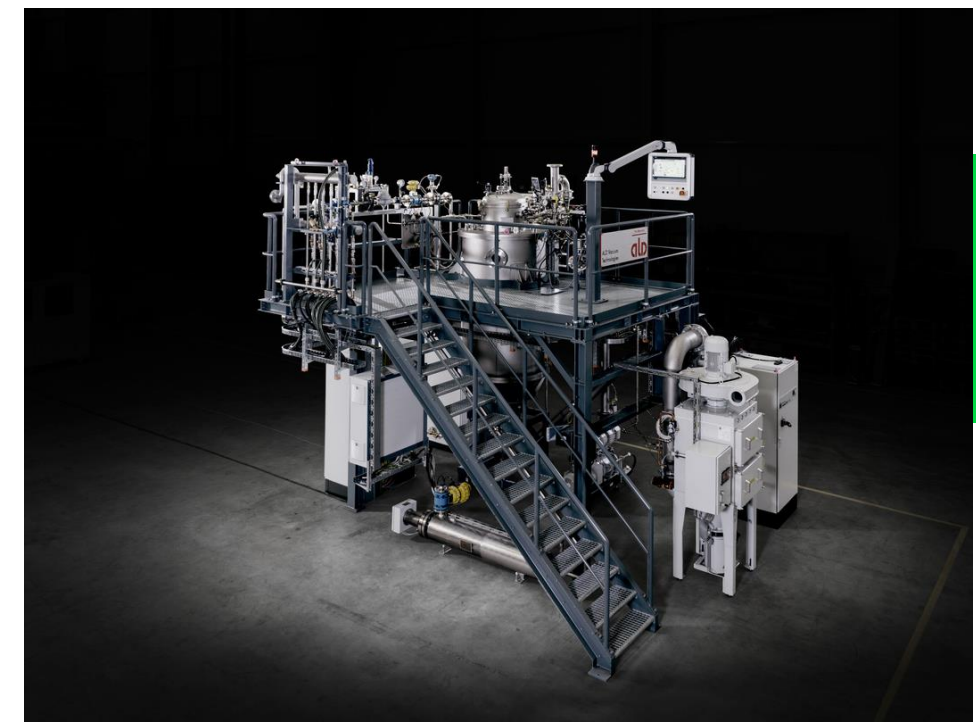
Aleksandra Kolano-Burian, PhD

phone no. +48 (32) 238 02 51

e-mail: aleksandra.kolano-burian@imn.lukasiewicz.gov.pl

Areas of activity:

- technology for the production of nanocomposites in a form of wound or stacked cores
- stators for electric motors and ventricular assist pumps supporting heart function
- production of contact rivets
- production of amorphous binders
- gas atomization
- technology for the production of printed magnetic components
- new materials and technologies for power electronics, energy, transport and medicine





CENTRE OF POWDER AND COMPOSITE MATERIALS



Director of the Centre

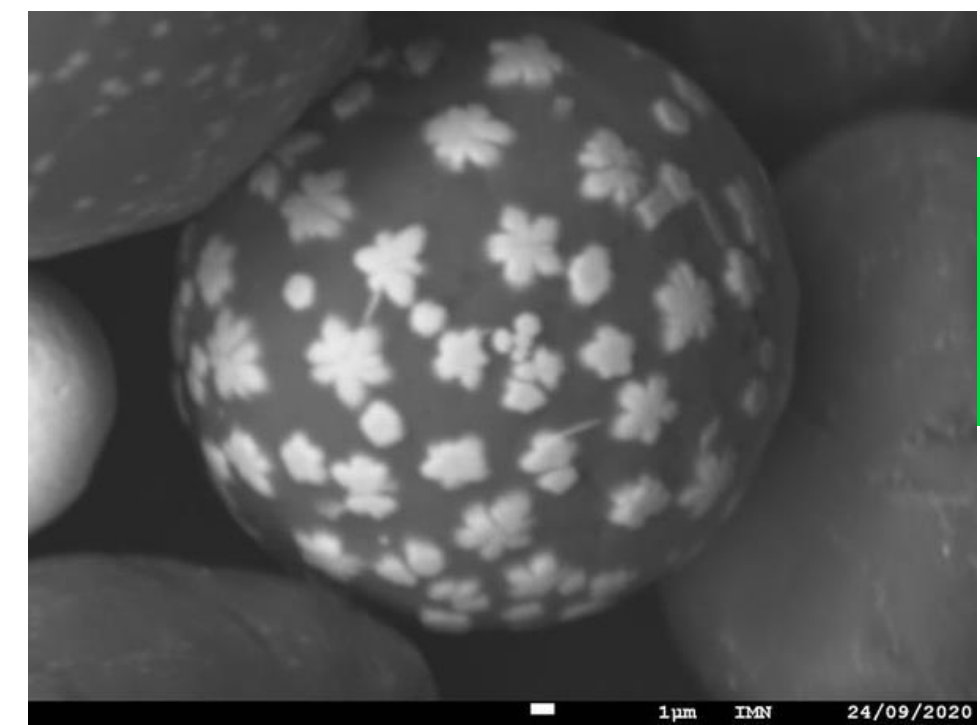
Adriana Wrona, PhD

phone no. +48 (32) 238 06 32

e-mail: adriana.wrona@imn.lukasiewicz.gov.pl

Areas of activity:

- production of powders by plasma spraying
- development of functional coatings produced by plasma spraying
- production of metallic and composite micro-, and nanopowders by chemical methods, mechanical synthesis, and grinding
- recycling of materials using plasma and chemical technologies
- production of biologically active materials with antimicrobial properties using copper-based composites
- production of powders for additive manufacturing (AM) processes





ŁUKASIEWICZ - IMN DIVISION IN POZNAŃ



Director of the Division

Grzegorz Lota, PhD, Prof

tel. +48 (61) 279 78 00

e-mail: claio@claio.poznan.pl

Areas of activity:

- development of solutions in the field of stationary energy storage systems as buffer power supplies integrated with renewable energy sources for civil and military applications
- BTR series thermal batteries, aircraft and special purposes batteries
- research works in the field of materials of chemical power sources, and batteries recycling
- implementation and market expertise
- certification of the mobile power sources
- research on the new types of chemical power sources





ŁUKASIEWICZ – IMN DIVISION IN SKAWINA



Director of the Division

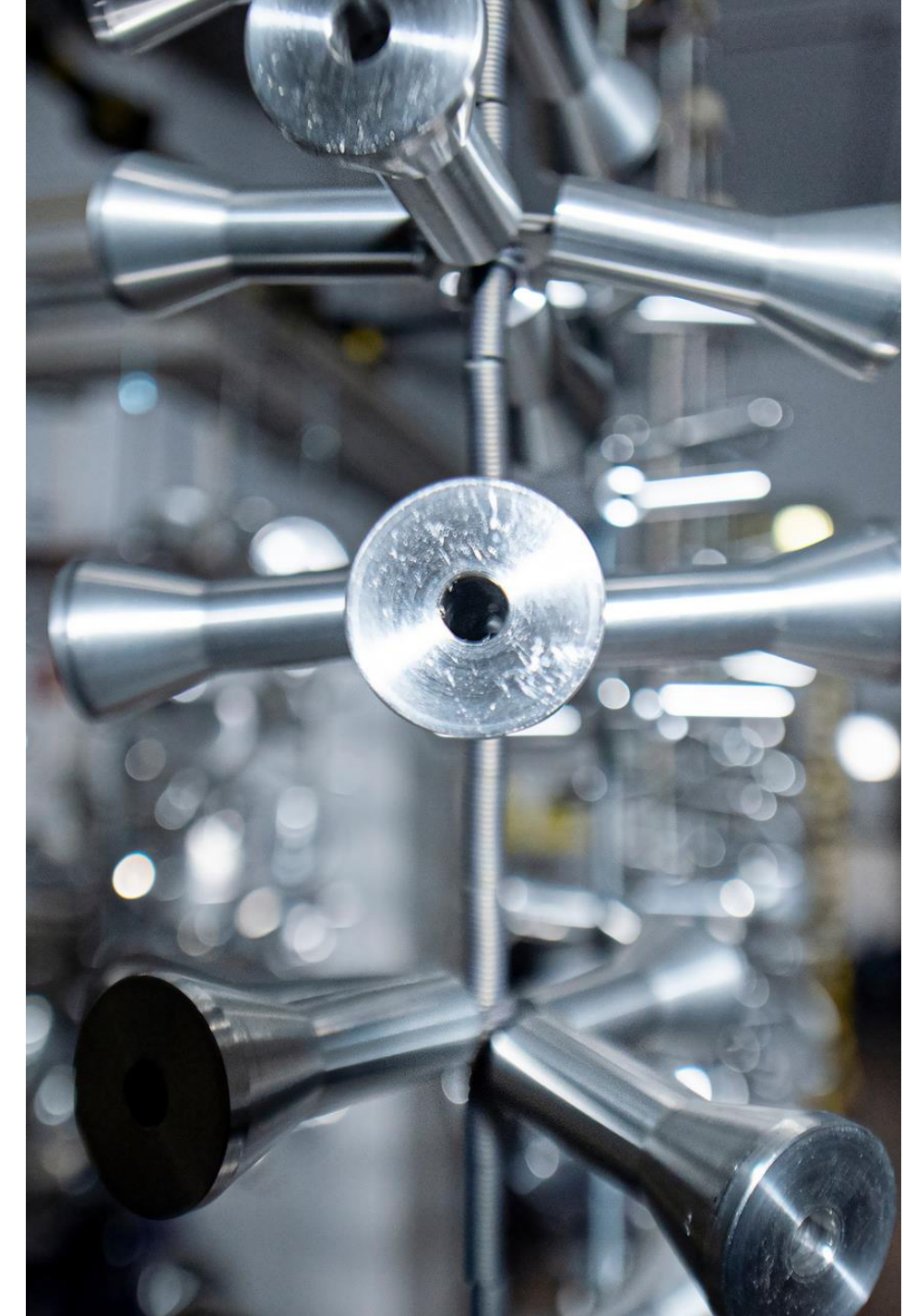
Andrzej Kłyszewski, PhD

phone no. +48 (12) 277 88 10

e-mail: oml@imn.lukasiewicz.gov.pl

Areas of activity:

- development of technology for the preparation of the liquid metal for casting
- casting of aluminium, aluminium alloys, and magnesium alloys in a form of ingots and bars for plastic working
- processes of plastic working of light metals, including extrusion, rolling, forging, drawing, and stamping
- manufacturing of protective coatings on Al and Mg-based products
- production of new advanced materials based on light metals
- corrosion tests





ŁUKASIEWICZ – IMN DIVISION IN LEGNICA



Director of the Division

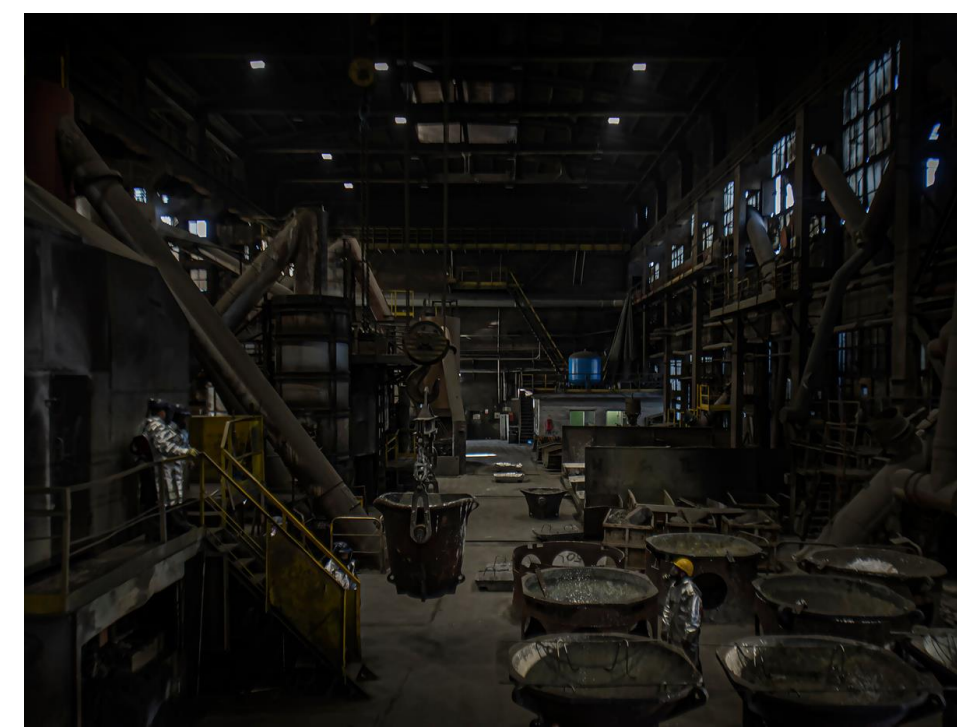
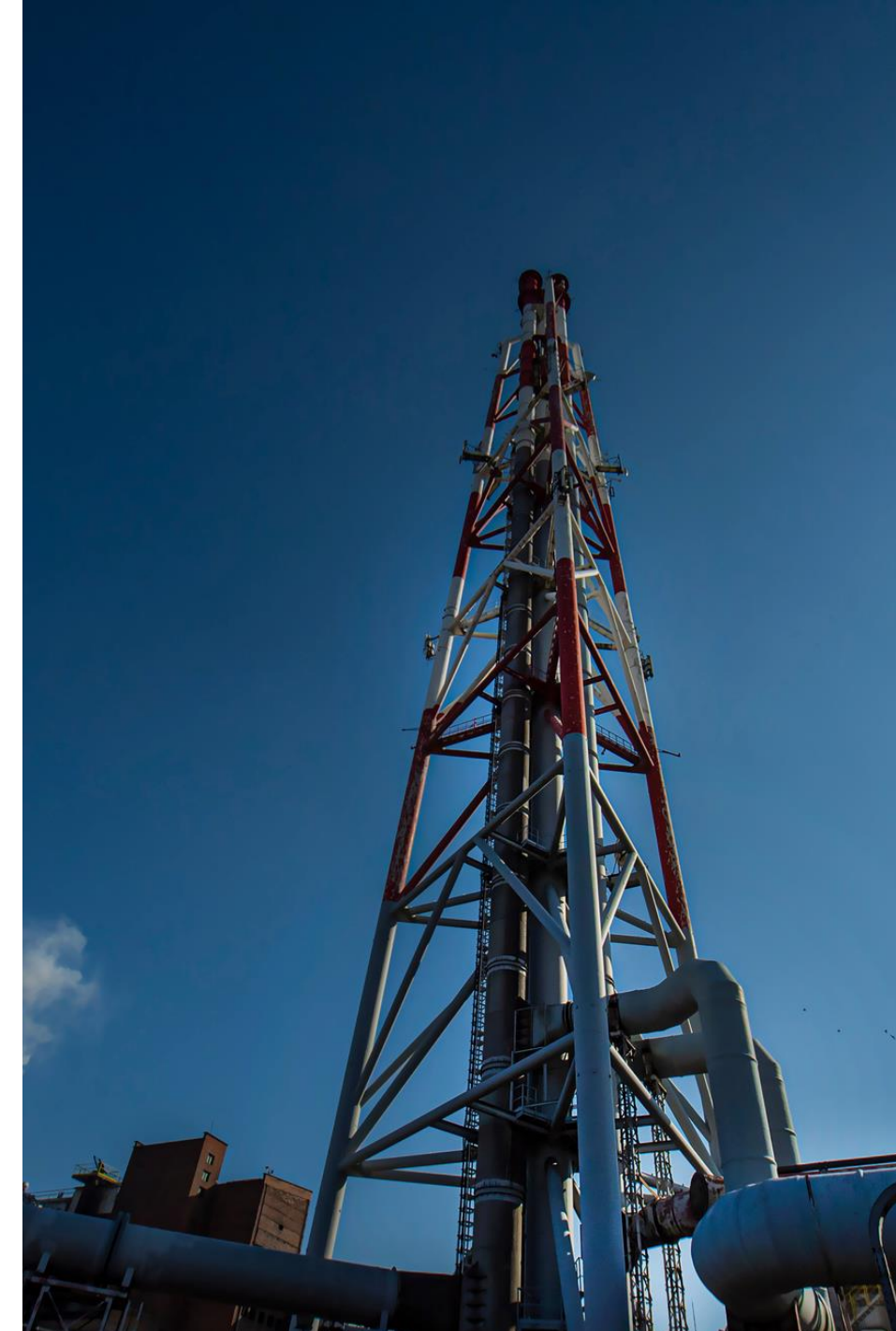
Arkadiusz Szpakowski, MA

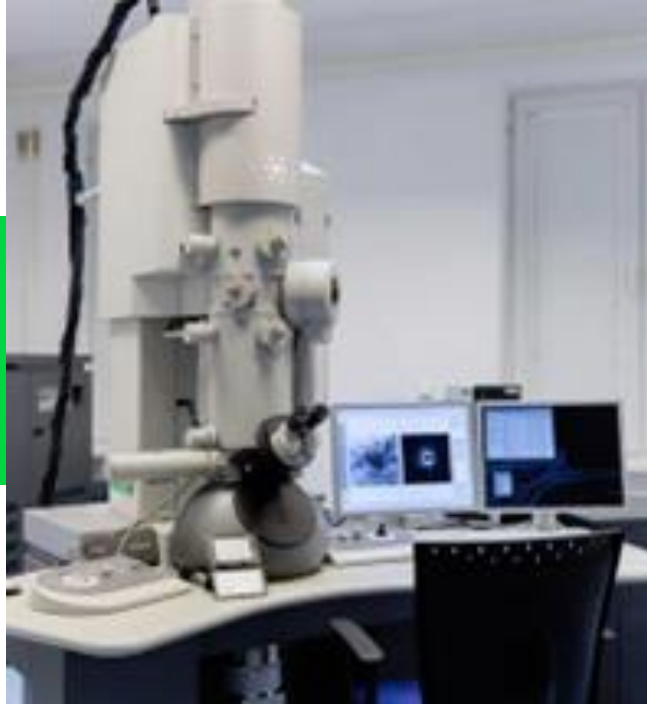
phone no. +48 [76] 743 98 30

e-mail: sekretariat@imn.lukasiewicz.gov.pl

Areas of activity:

- professional waste management
- production based on waste materials
- proprietary recovery technologies
- experimental production installations
- R&D and implementation works supported by the experience of the main R&D centre of the Polish non-ferrous metals industry
- production of the abrasive used for high-pressure cleaning – Polgrit abrasive

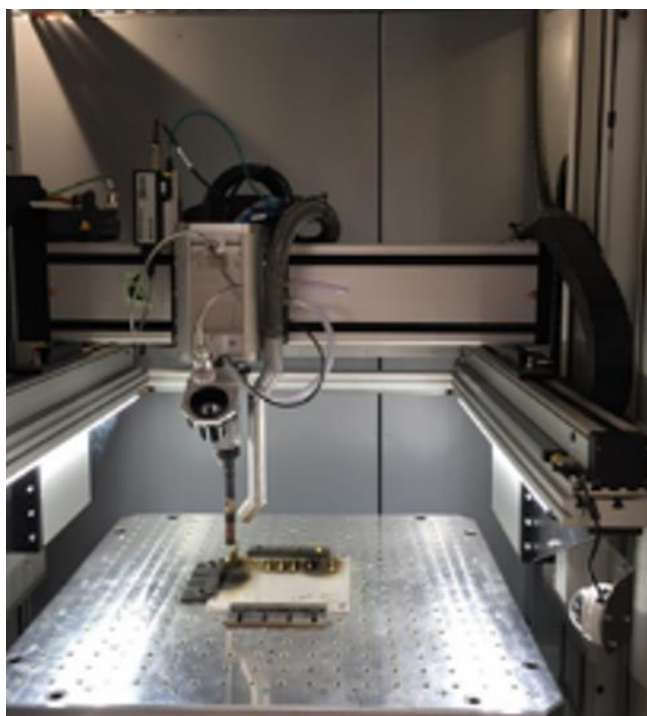




PRODUCTION POSSIBILITIES

Produkcja w Łukasiewicz - IMN

- Possibility of production from a few kilograms to several tons
- Small series production
- Flexibility in modification of the material properties
- Short delivery time
- Possibility of products and technologies upgrading
- Testing the solutions on a laboratory/semi-industrial scale





AREAS OF COOPERATION

- Castings of non-ferrous metals
- Non-ferrous metal products after plastic working
- Decorative-protective and hard anti-abrasive coatings on Al and Mg-based alloys
- Rapid prototyping based on 3D printing techniques
- Additional light armour
- Technologies for the production of sheets and strips made of non-ferrous metals intended for stamping
- Sliding materials
- Non-ferrous metal materials intended for potentially explosive environments
- Non-ferrous metal alloys with improved properties designed for operating in difficult conditions

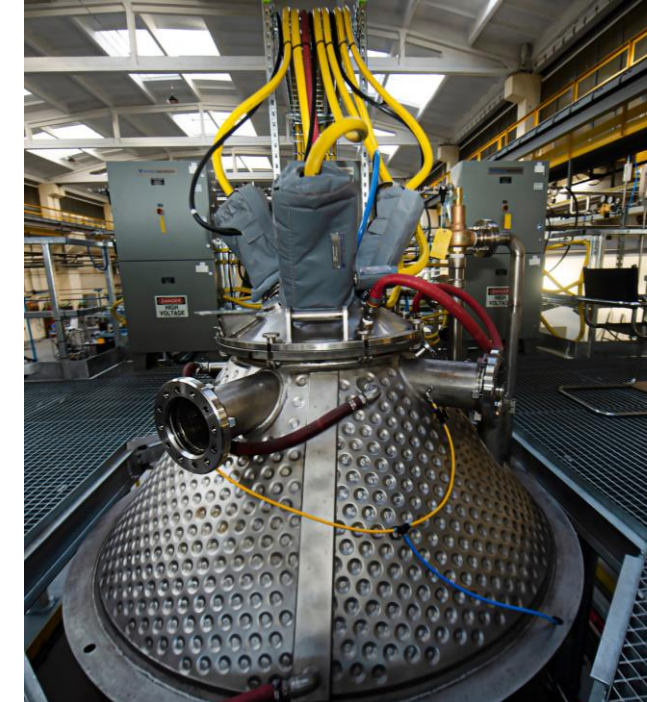


AREAS OF COOPERATION

- Heavy metal-based materials
- Metallic or composite protective coatings increasing the resistance of metallic surfaces
- Thermal batteries as a power supply for guidance, steering, and standby mode systems of intelligent ammunition (rockets, guided missiles, bombs, torpedos, etc.)
- Ampoule batteries to power the intelligent ammunition (mainly programmable and specialized missiles)
- Development and production of Li-ion, Ni-MH, and Lithium – thionyl chloride cell packages

PILOT INSTALLATIONS

- Installation for examination of gas desulphurization processes
- Installation for examination of membrane processes
- Refrigerating cycle installation with a fan cooler
- Laboratory pilot installation for the enrichment of mineral resources (LPI) – simulation of the industrial flotation processes
- Pilot-scale installations of Waelz kiln, rotary-rocking furnace, arc-resistance furnaces, and plasma arc furnace
- Pilot line for production of rapidly quenched materials
- Pilot line for production of the amorphous and nanocrystalline block, cut and stacked cores
- Pilot line for production of contact rivets
- Installation for conducting studies into leaching processes
- Installation for continuous liquid extraction processes
- Installation for investigations into electrorefining and electrowinning of metals
- Apparatus for conducting leaching processes
- Apparatus for conducting leaching processes at elevated pressure and temperature
- Pilot line for the semi-continuous casting of ingots, and extrusion of profiles from Al and Mg-based alloys



THANK YOU!

Contact



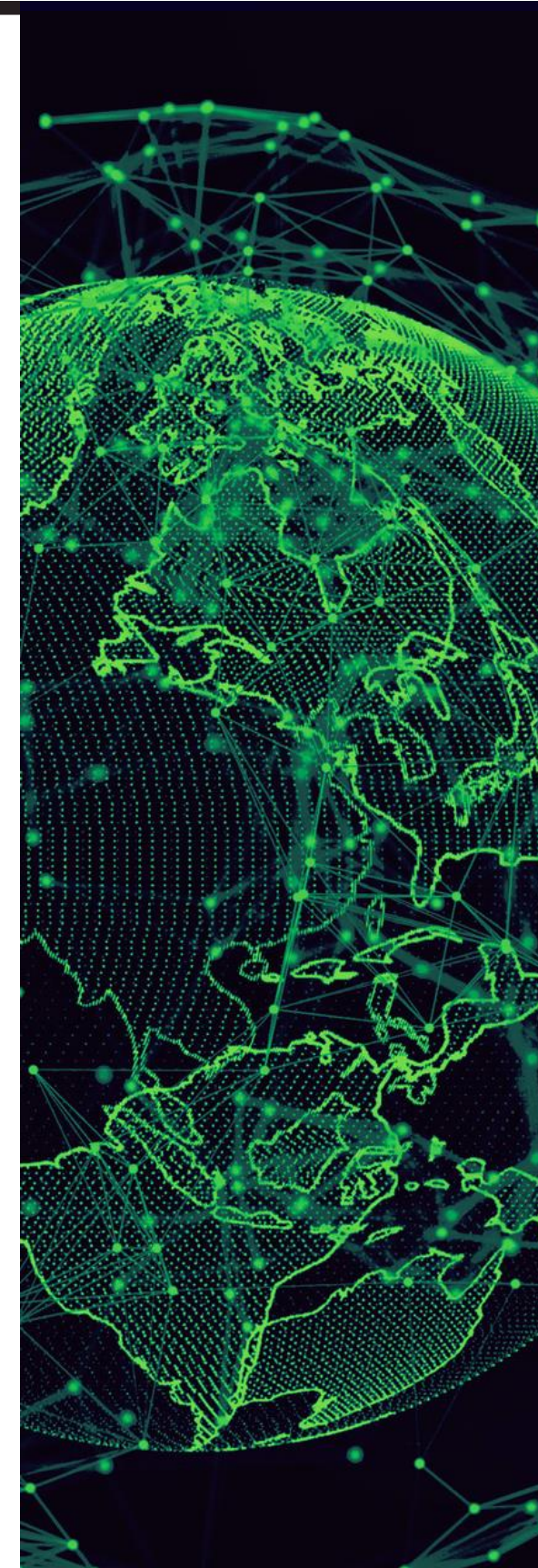
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