KMM-VIN for Science and Industry: A new model of European integration in Materials R&D

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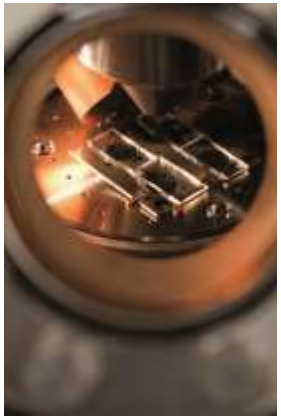
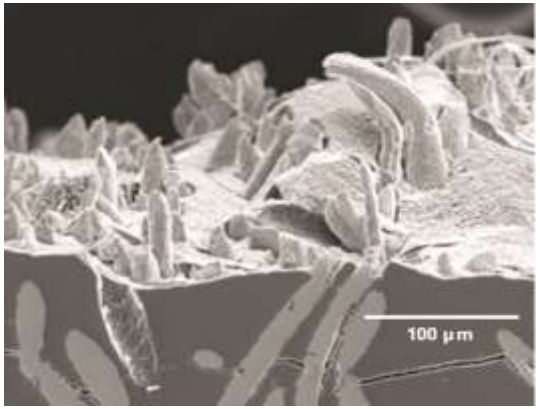
What is KMM-VIN?

The European Virtual Institute on Knowledge-based Multifunctional Materials

- Status: Intl' non-profit association (AISBL) established in Belgium in 2007
- Purpose: applied materials research, training and mobility activities
- Main focus: **advanced structural and functional materials**
- Main office in Brussels, Branch in Warsaw





KMM-VIN partners

The partnership (now **70**) consists of 35 core + 35 associate members

KMM-VIN mission

„To develop a **new European model of R&D&I integration** and self-sustainable cooperation of the stakeholders in the area of knowledge-based structural and functional materials, offering wide access to research, technology and development for industry via R&D projects, testing, analysis and consultancy services.”

Core competency

- metals and highly processed alloys
- innovative high temperature steels
- advanced ceramics
- intermetallics and shape memory alloys
- composites and functionally graded materials
- coatings, layered materials, surface modification
- biomaterials and bioinspired materials
- joining of advanced materials
- modelling of advanced materials

KMM-VIN Activities

- collaborative research in Working Groups
- research offerings to respond to Calls for Proposals (e.g. H2020)
- Expert-Infra Database - inventory of members' expertise and equipment
- KMM Materials Toolkit - database of materials processed by members
- networking people through KMM Mobility Programme - Research Fellowships for young researchers and PhD students
- information on funding opportunities in KMM area and events
- technological roadmaps and foresights
- publication series via KMM editorial office
- communication and management tools
- support help-desk (IPR, project management).

KMM-VIN projects (FP6, FP7 and H2020)

KMM-NoE (FP6) Network of Excellence „Knowledge-based Multicomponent Materials for Durable and Safe Applications (2004-2009) – origin of KMM-VIN

MATRANS (FP7) "Micro and Nanocrystalline Functionally Graded Materials for Transport Applications" (2010-2013) - **coordinator**

INNVIN (FP7) "Innovative materials solutions for Transport, Energy and Biomedical sectors by strengthening integration and enhancing research dynamics of KMM-VIN" (2012-2015) - **coordinator**

INTeg-Risk (FP7) "Early Recognition, Monitoring and Integrated Management of Emerging, New Technologies Related, Risks." (2008-2013) - **beneficiary**

MUST (FP7) „Multi Level Protection of Materials for Vehicles by Smart Nanocontainers" (2008-2012) - **beneficiary**

MatVal (FP7) „Alliance for materials: A value chain approach to materials research and innovation" (2012-2014) – **beneficiary**

MATCH (H2020) „The Alliance for Materials way to the creation of the MATerials Common House" (2015-2017) - **beneficiary**

Example of R&D project: MATRANS (FP7)

MATRANS „**Micro and Nano-crystalline Functionally Graded Materials for Transport Applications**”

FP7 cooperative R&D project (2010-2013), EU funding 3.6 M€; 16 partners (9 KMM-VIN); coordinator: KMM-VIN

THRUSTER
HVOF sprayed **FGM** (Cu-Al_2O_3)
After „hot exhaust test"

Weight reduction 20%

VALVE
$NiAl$-Al_2O_3 (**FGM**)

Motored engine head - dry test

Life engine test

BRAKE DISC
Infiltrated **FGM** (Al_2O_3-Cu)

KMM-VIN Mobility Programme

- Research Fellowships for PhD students and young researchers (<10 yrs after PhD)
- Fellowship of 1500 € / month to carry out research at another KMM-VIN member organisation
- Competitive call for applications open once a year
- Joint journal publications expected within 1 year after fellowship completion.

KMM-VIN Services for Industry

European Virtual Institute on Knowledge-based Multifunctional Materials AISBL

What industry sectors are targeted by KMM-VIN?

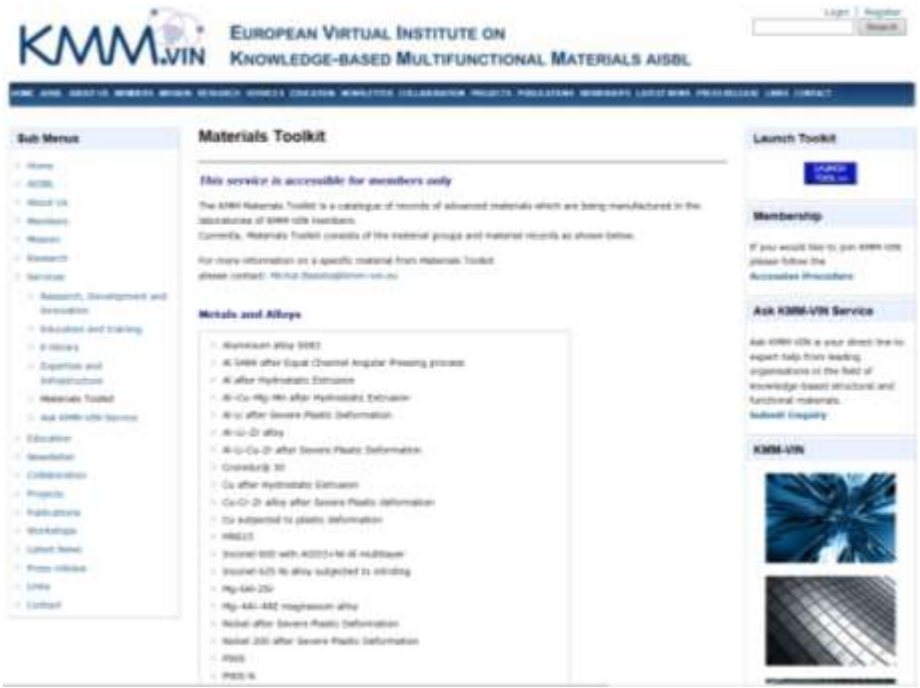
- **TRANSPORT** automotive, rail and maritime
- **AEROSPACE and AERONAUTICS**
- **ENERGY** conventional and renewable
- **HEALTH**

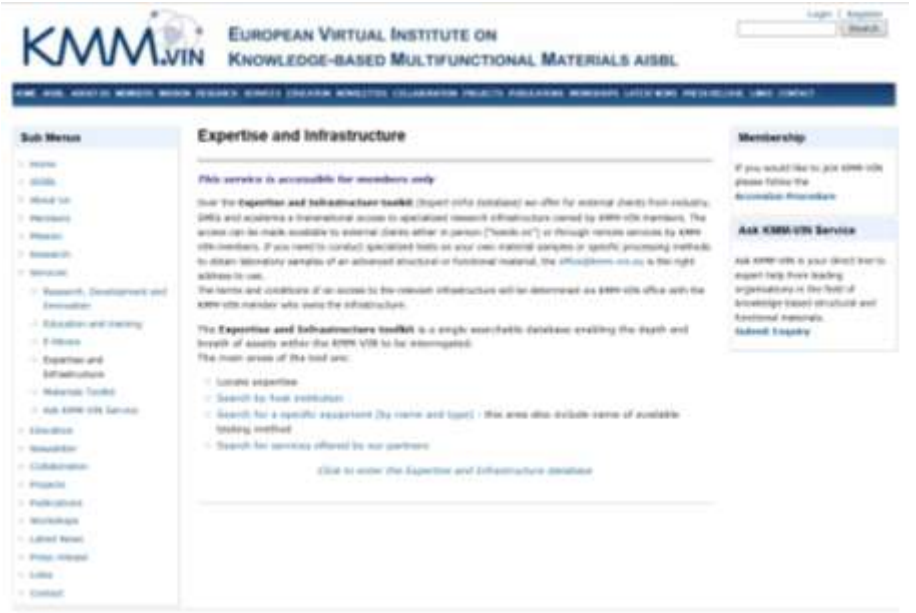
KMM-VIN services for Industry

- Access to R&D expertise and infrastructure across Europe
  - ✓ Expert-Infra Database - inventory of members' expertise and equipment
  - ✓ KMM Materials Toolkit - database of materials processed by members
- Industrial Workshops
- Specialised Courses
- Networking opportunities through membership of KMM-VIN
- Participation in Working Groups' internal projects

Materials Toolkit & Expert-Infra

KMM-VIN services for Industry





R&D Structure

Joint research activities in Working Groups

WG1: MATERIALS FOR TRANSPORT

30+ members
Coordinators:
P. Egizabal (TECNALIA)
Th. Weissgaerber (FhG-IFAM)

WG2: MATERIALS FOR ENERGY

60+members
Coordinators:
Ch. Sommitsch (TU Graz)
M. Ferraris (POLITO)

WG3: BIOMATERIALS

30+ members
Coordinators:
A. Boccaccini (U. Erlangen)
Ch. Hellmich (TU Wien)

WG4: MODELLING

40+ members
Coordinators: **C. Poletti** (TU Graz) and **J. Rojek** (IPPT Warsaw)

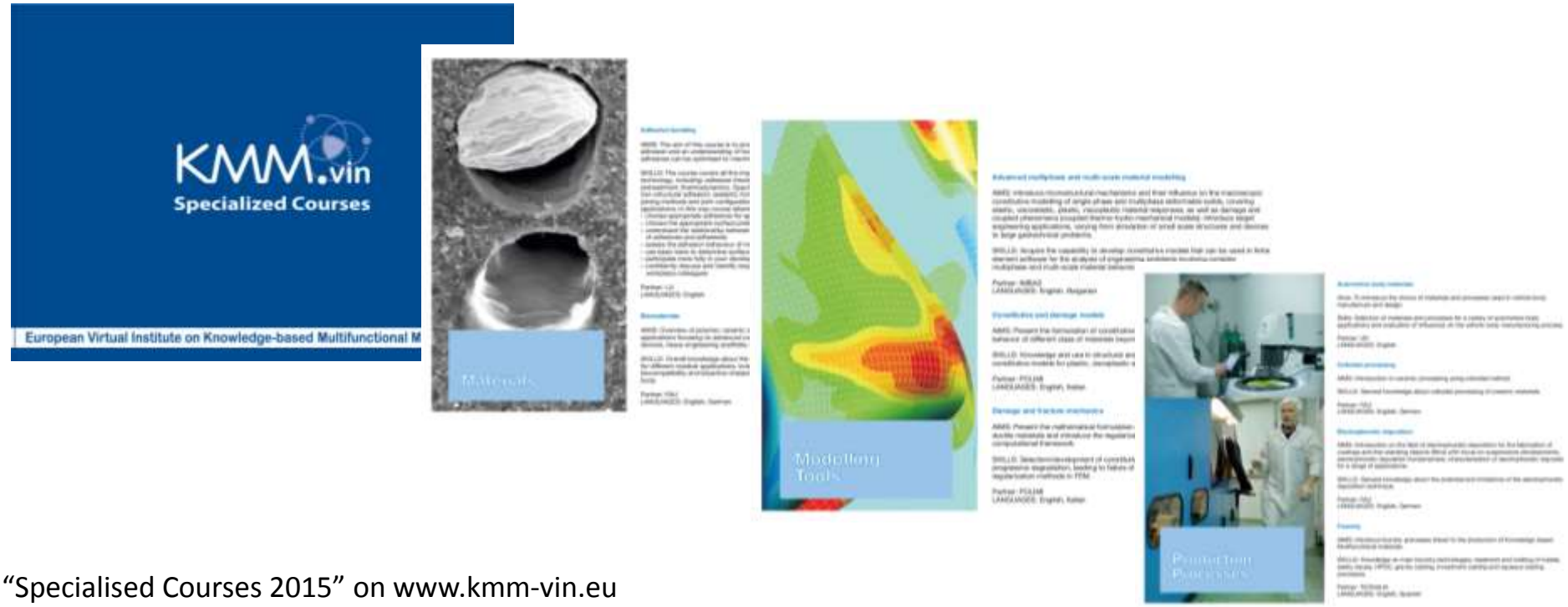
KMM-VIN educational/training offer

- KMM-VIN Specialized Courses
- KMM-VIN Industrial Workshops

Specialised Courses

Specific training on Materials, Processes, Characterization, Modeling and Risk Management

- Concept: One-day in house training or e-learning tailored to company's needs



"Specialised Courses 2015" on www.kmm-vin.eu

Industrial Workshops

IW1: „Materials for Energy”
10-11 July 2013, Madrid

IW2: „Current Research, Industrial and Clinical Issues in Bone Implant Development”
21-22 May 2014, Bremen

IW3: „Current Research on Materials and Technologies for Transport Application“
3-4 Nov. 2014, Dresden

IW4: „Advanced Materials Modelling for Industrial Applications”
30 Jan. 2015, Graz

Thank you very much for your attention !

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