

# European and Internal Projects



European Virtual Institute on Knowledge-based Multifunctional Materials AISBL

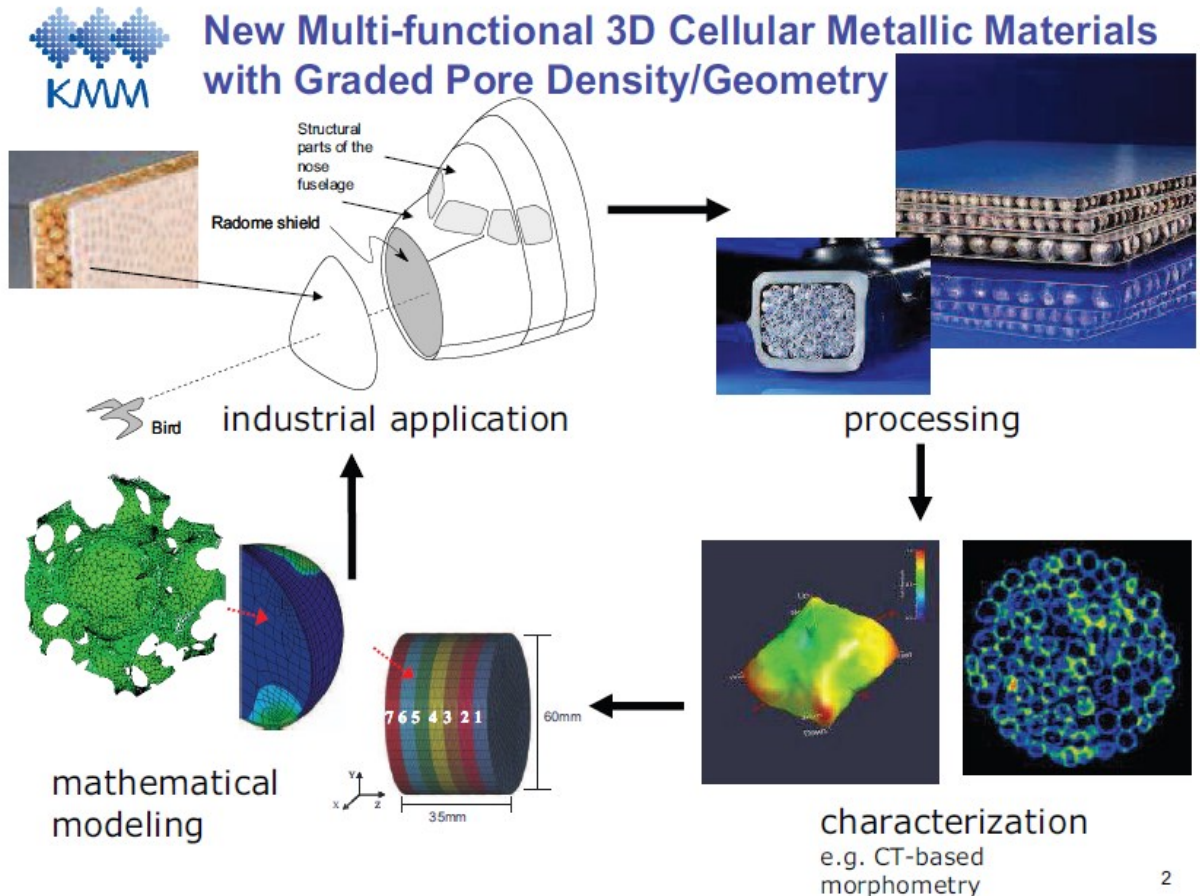
# FP6: KMM-NoE



## KMM-NoE

„Knowledge based  
Multicomponent  
Materials for Durable  
and Safe Performance”

FP6 Network of  
Excellence (2004-2009)  
EU funding 8.1 M€;  
34 partners (29 KMM-  
VIN); coordinator: IPPT



# FP7: MATRANS



**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<sub>2</sub>O<sub>3</sub>)  
After „hot exhaust test”



Weight reduction 20%

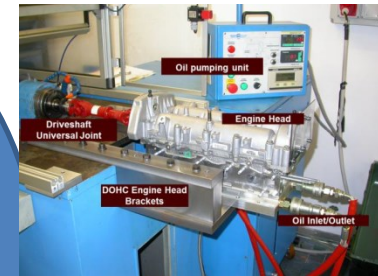


**VALVE**  
NiAl-Al<sub>2</sub>O<sub>3</sub> (**FGM**)



**BRAKE DISC**  
Infiltrated **FGM** (Al<sub>2</sub>O<sub>3</sub>-Cu)

Motored engine head - dry test



Life engine test

# Training Courses



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# Specialised Courses

- **Scientific courses**
  - Provide essential new skills for scientists and engineers working in materials science, chemistry, mechanics and process engineering
- **Specific trainings for industrial issues**
  - Materials, Processes, Characterization, Modeling and Risk Management
  - **Concept:** One-day training courses provided by specialized KMM-VIN members

Details of specific courses available on request

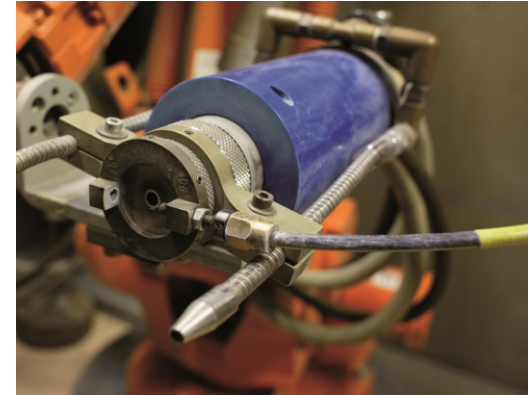
# Examples of Specialised Courses

## Materials

Biomaterials, scaffolds for tissue engineering and bioactive coatings  
Materials for orthopaedic implants  
Composite materials (bulk, FGM, coatings)  
Polymer science and technology  
Microstructured materials with fractal geometries  
Nanomaterials  
Materials for energy systems  
Light alloys and composites  
Materials for aeronautics and aerospace  
Nickel based superalloys

## Production Processes

Electrophoretic deposition  
Foundry  
Heat treatment of welded joints  
Plastics processing technology  
Joining technologies of dissimilar materials  
Rubber compounding and processing



## Characterization

Electron microscopy and tomography  
Residual stress by XRD and neutron diffraction

## Modeling and simulation

Constitutive models of KMM materials  
Damage and fracture mechanics  
Finite element modeling  
Fractal models for microstructured materials  
Identification procedures  
Modeling of sintering, prediction of residual stresses  
Tissue engineering: biomaterials and cardiovascular systems

# Industrial Workshops

## **IW3: „Advanced Manufacturing Technologies for Transport Application“**

- 3-4 Nov. 2014, Dresden, Germany
- Day 1: Aerospace
- Day 2: Automotive
- Programme in progress



[www.kmm-vin.info](http://www.kmm-vin.info)

## **IW4: „Materials Modeling“**

- July 2015, Graz, Austria (in preparation)

# KMM-VIN Research Fellowships

- 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 (in 2014 total applications for 22 person-months).
- Joint publications expected within 1 year after fellowship completion.



# Return on membership

- ❖ Deep **networking** with European peer group
- ❖ Participation in joint research activities in Working Groups
- ❖ Dissemination and awareness marketing from membership
- ❖ Opportunity to be partner in EU project proposals
- ❖ Eligibility to KMM-VIN Mobility Programme (Research Fellowships)

# Questions ?