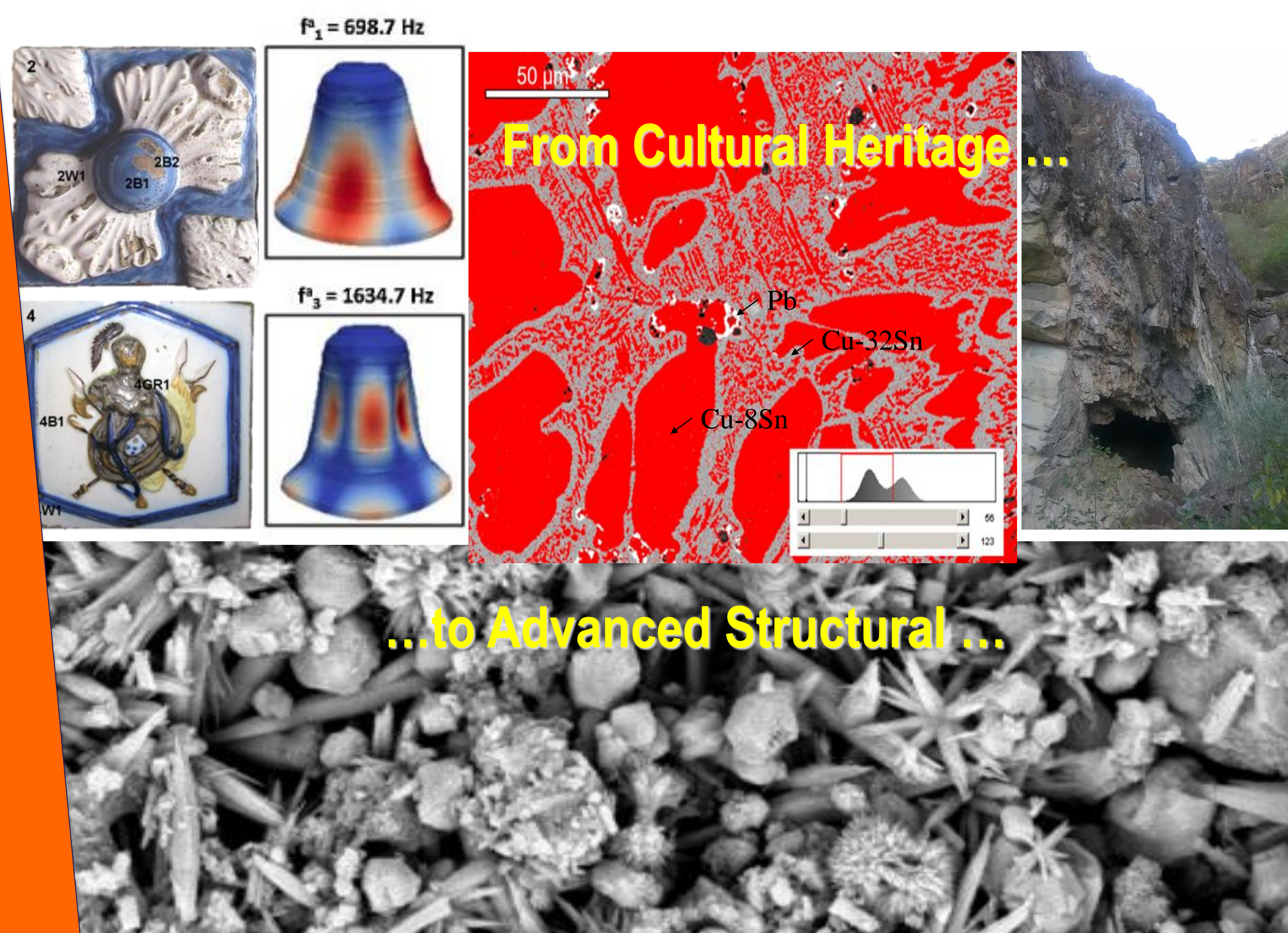


Structural Materials

Responsible: F. Braz Fernandes

10 Researchers (PhD)

5 Researchers (MSc)



Processing & Characterization

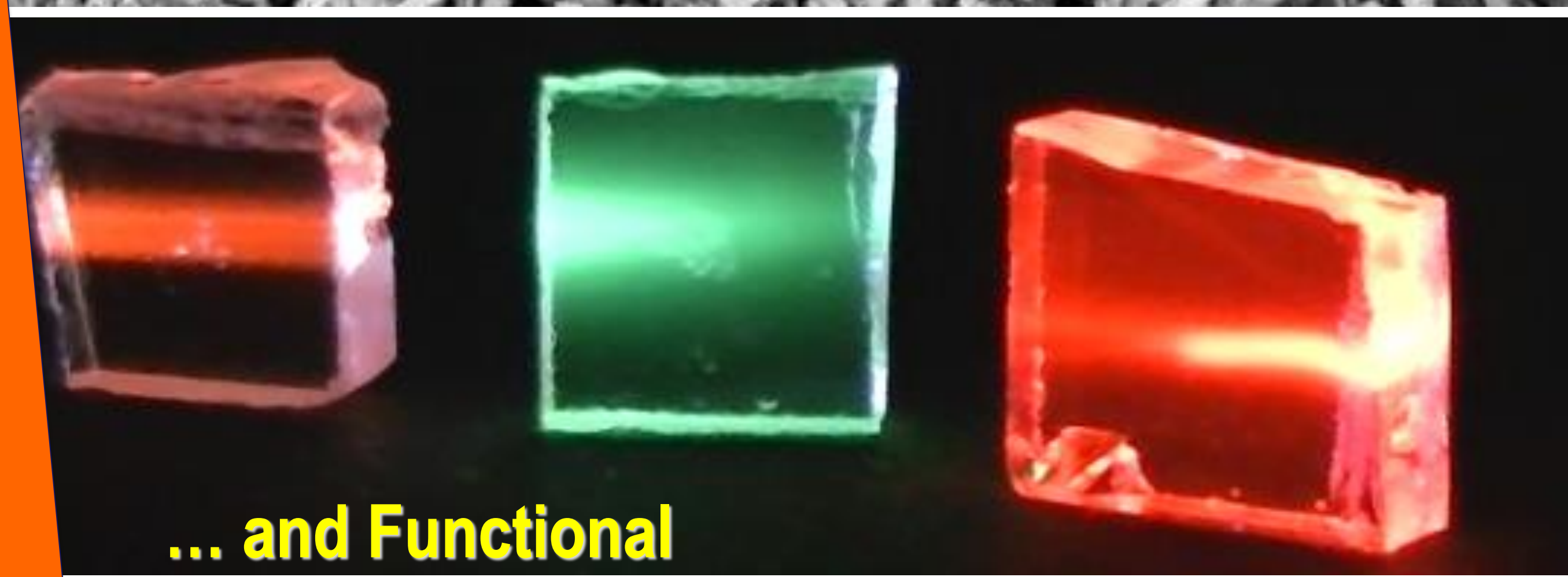
Processing

Casting and heat treating furnaces
Rolling and severe plastic deformation
3D printing

Characterization

Thermal (DSC/DTA/DT), thermomechanical (TMA),
mechanical testing, micro/macro-hardness
Structural (SEM, OM, XRD) analysis
Compositional (XRF-WDS, EDS) analysis
Granulometry

From lab-scale to Large-Scale Facilities



Scientific Areas

Cultural Heritage Materials

Reconstruction of ancient processing techniques
Characterization of ancient materials
Artifacts origin validation
Raw Materials and Mining

Nanostructured glasses and ceramics

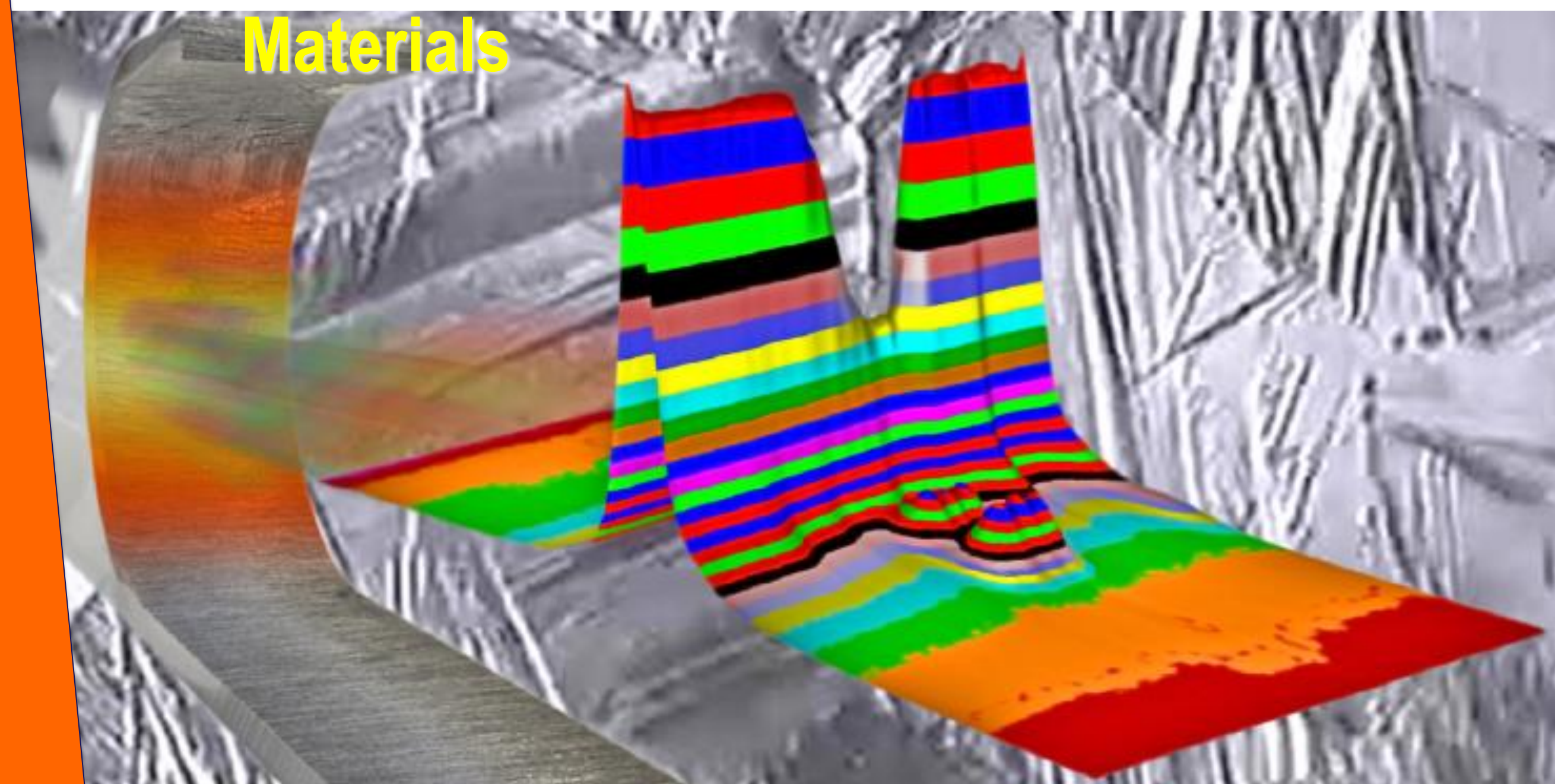
Synthesis of borosilicates (rare-earth doped)
Structural, thermal, electrical and optical characterization

Functionally Graded Materials

Composite and multifunctional materials
Auxetic materials

Shape Memory Alloys

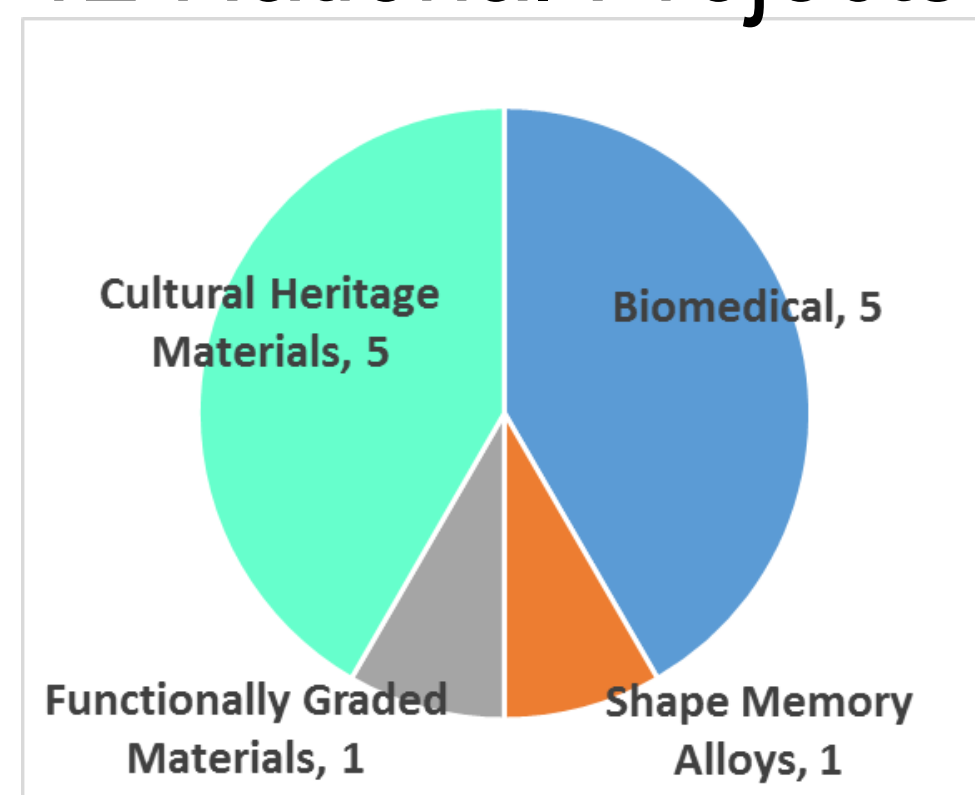
Welding & Hot/Cold working
In situ structural characterization
Applications in dentistry



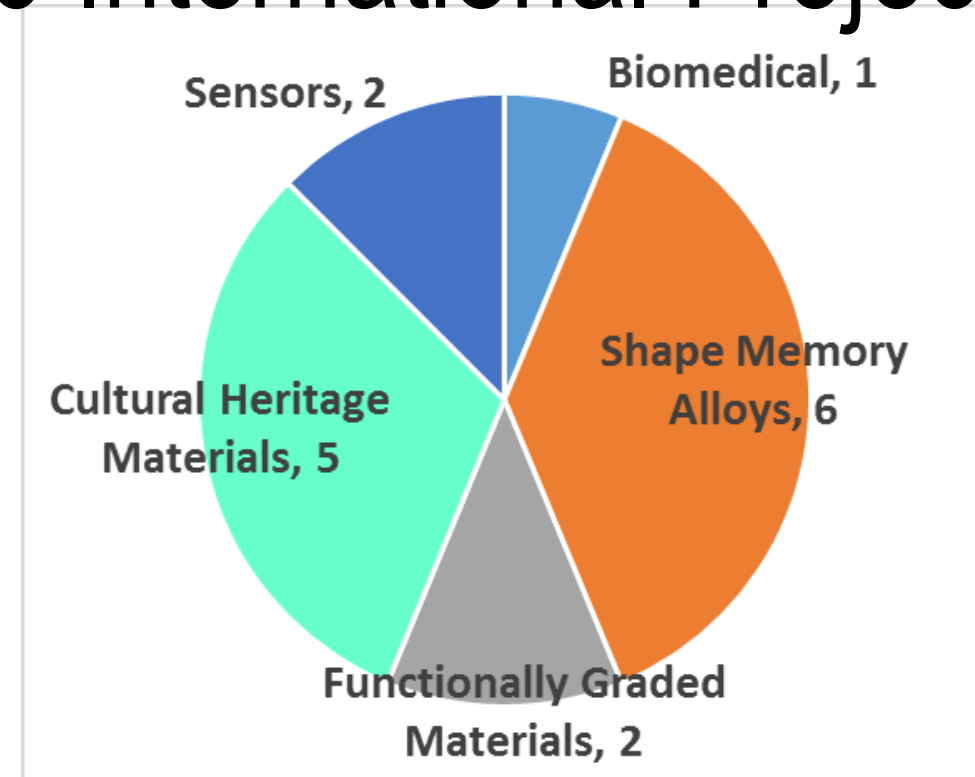
Running Projects (2013-2018)



12 National Projects



16 International Projects



Relevant Publications

JP Oliveira, RM Miranda, FM Braz Fernandes **Welding and Joining of NiTi Shape Memory Alloys: A Review.** *Progress in Materials Science* (2017) 88, 412–466. IF: 31.083

JP Oliveira, B Anton, Z Zeng, CM Andrei, Y Zhou, RM Miranda, FMB Fernandes **Laser joining of NiTi to Ti6Al4V using a Niobium interlayer.** *Acta Materialia* (2016) 105, 9–15. IF: 5.149

CFC Joao, C Echeverria, A Velhinho, JC Silva, MH Godinho, JP Borges **Bio-inspired production of chitosan/chitin films from liquid crystalline suspensions.** *Carbohydrate Polymers* (2017) 155, 372–381. IF: 4.219

E Figueiredo, J Fonte, A Lima, JP Veiga, RJC Silva, J Mirão **Ancient tin production: Slags from the Iron Age Carvalhelhos hillfort (NW Iberian Peninsula).** *Journal of Archaeological Science* (2018) 93, 1–16. IF: 3.061

R Borges, L Alves, RJC Silva, MF Araújo, A Candeias, V Corregidor, P Valério, P Barrulas **Investigation of surface silver enrichment in ancient high silver alloys by PIXE, EDXRF, LA-ICP-MS and SEM-EDS.** *Microchemical Journal* 131 (2017) 103–111. IF: 3.02

ML Coutinho, AZ Miller, MA Rogerio-Candelera, J Mirao, LC Alves, JP Veiga, H Aguas, S Pereira, A Lyubchik, MF Macedo **An integrated approach for assessing the bioreceptivity of glazed tiles to phototrophic microorganisms.** *Biofouling* (2016) 32, 243–259. IF: 3.000

RS Soares, RCC Monteiro, MMRA Lima, RJC Silva **Crystallization of lithium disilicate-based multicomponent glasses - effect of silica/lithia ratio.** *Ceramics International* 41 (2015) 317–324. IF: 2.758

V Debut, M Carvalho, E Figueiredo, J Antunes, RJC Silva **The sound of bronze: Virtual resurrection of a broken medieval bell.** *Journal of Cultural Heritage* (2016) 19, 544–554. IF: 1.533