

Subproject 2 “Bulk-Surface-Interface Material Science”

Since many years, laboratories belonging to the Lorraine Country Universities have set on relationships with laboratories of the Russian Federation in the field of material science: INTAS contracts, stays of Russian colleagues, PhD with joint tutoring, individual cooperation programs. This led to the ARCUS subproject 2 labeled “Bulk-Surface-Interface Material Science”, intended to improve harmonization and to be further focused on two main topics:

- I) Microstructure – properties interrelation
- II) High performance surface engineering

Within the frame of the Russian – Lorraine partnership, this third French – Russian meeting held in Metz highlights advances in both topics, as shown in the following cosigned papers. In terms of microstructure tailoring, a better understanding of phase formation related to the thermo dynamical and mechanical history of alloys goes more and more along with specific microstructure characterization and modeling: for instance, designed texturing of magnesium based alloys, titanium sheets, zone melting... Advances in surface engineering encompass increasingly bombardment processes and physical vapor deposition routes; for the latter, the plasma enhancement allows new kinds of well functional controlled thin top layers: ultra hard coatings, corrosion resistant ...