Séminaire de Léo Portebois

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Salle 4-A014, Institut Jean Lamour, Campus Artem

Surface reactivity of materials: application to surface functionalization and assembly by brazing

The study of surface reactivity of materials is a particularly broad theme that finds applications in multiple sectors of academic research and industry. Fields as surface treatment or assembly by brazing are there directly concerned through the strategic markets of transport (aeronautics, aerospace, automotive), energy (production and storage), defense or advanced manufacturing.

Whether they involve solid-gas, solid-liquid, solid-solid or liquid-gas reactions, the physicochemical processes involved in surface reactivity govern the final properties of the treated parts (metallic, intermetallic or ceramic). A good knowledge of the mechanisms involved, thermodynamic quantities and associated kinetics is therefore necessary in order to control the processes.

Through this presentation, two families of processes will be considered, with on the one hand **surface functionalization** by activated cementation (out of pack, in pack, "slurry"), and on the other hand **assembly by brazing** (metal / metal and ceramic / metal). In both cases, after having introduced the general concepts related to the methods, main thermodynamic and kinetic considerations will be exposed. Examples of recent achievements involving collaborative work between IJL and EEIGM_Halle will be described and used to highlight specific facilities available in both entities. The talk will finally open on discussions around the future of these complementary processes.

Séminaire organisé par le Département Chimie et physique des surfaces et des solides