Mouillage et réactivité interfaciale indium/plot métalliques dans le cadre du développement d'interconnexions de faibles dimensions pour l'assemblage par brasage des composants photoniques

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Tuesday, December 12, 2023 at 09:00

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Abstract : Cooled infrared detectors are packaged by flip chip soldering technique. The detection matrix and the readout electronic are mechanically and electrically connected by In interconnections (joints). Interfacial reaction between Au and In occurring in these joints leads to the growth of brittle Au-In compounds. However, in the case of small joints, the proportion of these compounds is so high that it is impossible to manage the stress induced during component manufacturing and/or operation. The aim of this thesis is to develop new, more robust interconnect structures by minimizing the thickness of the IMC compounds. For that, we carried out an experimental study on interfacial reactivity and wetting in the current system (Au/In) as well as in other metal (M)/In systems (M = Pt, Ti, Mo, Nb, W, Ni) in order to propose alternative system(s) for assembly with In.