

Plenary Talk

PLV VI Wed 14:00 HSZ/AUDI

Materials selection methods: a compass in the jungle — ●YVES BRÉCHET — Monash University, Materials Science Department, Clayton Campus, Melbourne, Australia

Materials use and development have undergone a profound transformation in the last decades: the “book of specifications” is more and more demanding, more and more multifunctional, and additional requests such as sustainability have progressively strengthened conflicting requirements. At the same time, the variety of materials available to engineers has expanded in such a way that materials selection and

materials design is a must for efficient use of materials. To meet this new request, materials and process databases, and materials selection tools have been developed in the last 20 years, allowing both for a better use of materials, and for a guidance of “materials by design”. The case of materials associated with a prescribed geometry, so-called “architected materials”, are a striking example of this evolution from “materials by chance”, via “materials in competition”, to “materials by design”. Recent developments in AI to generate new materials open new opportunities and raise new challenges for this general trend toward materials by design.