

# 第 110 回マテリアルセミナー

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下記の要領で第 110 回マテリアルセミナーを開催いたします。多数ご参加くださいますようお願い申し上げます。

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日時：平成 29 年 10 月 27 日（金）10 時 30 分 ~ 11 時 30 分

場所：北海道大学工学部 材料・化学棟 5F ゼミ室 (MC508)

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題目：ONERA's Trajectory in R & D of Materials for Aircraft Gas Turbine Engines

Abstract:

Long time committed mainly to military applications, ONERA is now more and more directing its R&D activities on the materials toward their civil applications. However, as far as the materials for aircraft gas turbine engines (turbofan engines) are concerned, the overall challenge remains the same, that is to say, higher temperature capability and higher specific strength. A continuous effort of improvement of these material properties is crucial to be able to meet more and more demanding expectations of modern engine designers, who handle numerous parameters such as Overall Pressure Ratio (OPR), Turbine Inlet Temperature (TIT), Bypass Ratio (BPR) in order to optimize the corresponding thermodynamic cycle to get the most efficient machines.

After emphasizing the need of higher and higher temperature and lighter and lighter materials for both military and civil engines, the paper reviews ONERA's trajectory of R&D work of the last fifty years conducted on engine materials, based on a tight partnership with Safran Group (SNECMA and TURBOMECA). Several topics of different periods will be presented respectively with corresponding motivation, objective and outcome by giving most salient scientific illustrations. These topics are:

- From CoTaC in-situ composites to single crystal Ni-base superalloys
- Titanium alloys in compressors
- Powder metallurgy
- Intermetallics ((a) concept of A2 - B2 microstructure, (b) multi-component B2 alloys and (c) TiAl alloys)

Some other on-going topics will also be mentioned (TBC, silicides of refractory metals). Finally, the paper will be presented by addressing future issues for each of the above topics.

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