**Céline Ruelle, Safran Tech**

**Title:** “Development of abradables and abrasives coating solutions for turbojet engines applications”

**Abstract:**
Turbojet engines performances and specific fuel consumption are affected by the operating gap between static and rotating parts. To limit leakage flows, abradables coatings are applied to all stator stages, allowing sacrificial wear, conservation of blade tip integrity and consequently, limiting the gap opening after a mechanical contact. Moreover, the continuous improvement of aeronautical engines efficiency imposes materials to evolve in harsh environment. Erosion resistance of abradable coating is therefore crucial, but this property is antagonistic to porosity rate, usually high in abradable coatings. One way of achieving this challenge is to incorporate an abrasive coating at the top of the blade, on rotor part.
In this context, the multi-partner RAPTOR project was launched, and its objective is to develop abradable-abrasive coating pairs. Different processes and materials are investigated for each turbojet engine stages (compressor and turbine), such as thermal spray and Physical Vapour Deposition (PVD). Basic coating properties such as microstructure and adhesion will be characterized, and erosion and abradability testing will be performed to evaluate coatings performance.

**Biography:**
Céline RUELLE is a researcher engineering at Safran Tech, Safran Group’s research centre. Graduated from Limoges engineering school ENSIL with a speciality in Materials and Surface Treatments, she started her carrier as a research engineering at IRCER laboratory. Her missions were to develop an anti-erosion coating on a composite by thermal spray. In 2021, she started a PhD thesis at IRCER laboratory in collaboration with the French Alternative Energies and Atomic Energy Commission (CEA) on segmented plasma torch characterization. She defended her PhD in February 2024 and is now working on abradables coating applications at Safran Tech.