

## **Adeline Orieux**

CAILABS

Topic

### **Upscaling Additive Manufacturing with MPLC-based Beam-shaping**

Laser Powder Bed Fusion (L-PBF) is an advanced manufacturing process characterized by slow build rates. Increasing laser power with conventional Gaussian beams results in high peak intensities, leading to material defects. To mitigate this, strategies such as defocusing the laser within the Rayleigh length and employing beam-shaping technologies like Multi-Plane Light Conversion (MPLC) are used. MPLC enables dynamic beam shape control, improving both printing speed and quality. This approach has demonstrated a 3.3-fold increase in processing speed for nickel alloy 625, with mechanical performance enhancements confirmed through testing.

### **About the Speaker**

Following her engineering degree from the Institut d'Optique, Adeline Orieux obtained her doctorate in 2012 from the University Paris Diderot in the field of nonlinear optics in semiconductors. She then continued her research in quantum optics at the Sapienza University in Rome and at Telecom Paris and University Pierre et Marie Curie in Paris. She joined CAILABS in 2017 and has worked on multiple applications: telecommunications (ground and space), defense, and material processing. She is now the Product Architect on the CANUNDA-HP product line, supervising the team and participating in the development of all high-power systems for material processing.