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ABSTRACT



PRESENTATION



PAPER



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## NOVEL INFRARED METHODOLOGIES FOR MATERIAL EMISSIVITY AND TEMPERATURE DETERMINATION FOR SPACE ATMOSPHERIC RE-ENTRY

The Thermal Protection Systems (TPSs) of space vehicles, in the atmospheric re-entry phase, have to withstand high thermal fluxes and high temperature and their emissivity is one of the main parameters to be characterized. Thermography combined to other devices, such as pyrometers and thermocouples, allows to characterize the emissivity of the material when it is heated in a high temperature furnace. Furthermore the use of the thermography performed dur-

ing a hypersonic Plasma Wind Tunnel test allows to obtain information about temperature and emissivity of the material in an environment similar to the one characterizing the atmospheric re-entry phase. Since the emissivity for innovative materials can be an unknown parameter, in order to obtain temperature maps free from emissivity, a new technique based on the dual color principle applied to the thermographic devices has been analysed.