During last 10 years, it has been pointed out that the reproducibility and reliability of air plasma sprayed (APS) coatings depend, among other parameters, on the particle velocity and temperature distributions prior to their impacts to the target surface. On-line control systems have been designed to follow these parameters in the harsh environment of booths. However, in spite of significant strides, works have yet to be carried out to establish relationships between deposit properties and in-flight particle parameters and/or surface target temperature, roughness and oxidation stage. The SPCTS laboratory at the University of Limoges has developed the SDC (Spray and Deposit Control) system in collaboration with SNECMA Services. It controls the stability of the spray jet and the mean particle trajectory together with the target surface temperature. It has been used with a device allowing to measure the deflection of a rectangular beam during APS of WC-Co17wt% or ZrO2+8wt%Y2O3 powder on Hastelloy X (Ni base alloy) substrate. The aim of this study was to determine...
which spray parameters influence the residual stresses, in order to achieve a mean compressive residual stress in the WC-Co17wt% coating on Hastelloy X and to control it with the deposit temperature.