

# Calorimetric analysis of coarse-grained polycrystalline aluminum by IRT and DIC

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## Abstract

In the long term, this investigation aims at achieving grain scaled energy balances at finite strain in mechanically-loaded metallic polycrystal specimen. For this purpose, two complementary imaging techniques were used in order to investigate the so-called materials thermomechanical behaviour: Digital Image Correlation (DIC) and InfraRed Thermography (IRT) to investigate respectively the kinematic and the thermal response of the material and, combining these two techniques, its calorimetric response. The aim of this paper is to present and to validate a novel IRT method which allows to perform the local thermal field measurements. The validation procedure was performed on numerical example associated to aluminum polycrystalline aggregates.

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