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ABSTRACT



PRESENTATION



PAPER



Maria Strąkowska graduated from the Faculty of Electrical, Electronic, Computer and Control Engineering of the Łódź University of Technology (LUT) and obtained her MSc in electronics and telecommunications with specialty in signal and image processing. She has also a PhD from the LUT's Department of Medical Electronics LUT. Her main research interest concerns the processing and analysis of thermal images and applications of thermography in various fields, particularly in medicine.

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## DPL NON-FOURIER HEAT TRANSFER MODELLING IN POROUS MATERIALS AND VALIDATION USING IR MEASUREMENT

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Modeling the Dual Phase Lag (DPL) is of interest to many researchers, but most focus solely on modeling without validating it through measurements. Measuring such phenomena is challenging due to the weak temperature signals from the objects under observation. We propose a novel method using infrared measurement to derive the thermal impedance of the object by analyzing the harmonics of the input

signal and the thermal response. This approach enables the determination of the thermal impedance of the measured object and confirms the presence of the dual phase lag phenomena in porous materials. Furthermore, we aim to validate that the thermal conductivity in such materials is frequency-dependent due to the DPL model concept.