

## 3Omega-methode made easier

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The 3Omega method is a very well-established method for the measurement of the thermal conductivity of thin films. The accuracy is the strong point of the method, even with very thin films. The weak points are the sample preparation and also the thermal contrast required between the film and the substrate. The Thermoelectric System department of the Fraunhofer-Institute offers a user-friendly measurement system based on the 3Omega-methode suitable for laboratory uses or for the industry. Nevertheless the difficulty for our customers is the sample preparation. Up to now it was necessary to make by photolithography a very narrow heater directly on the sample surface, for which the fabrication may be difficult when the sample surface is rough. In this article we show that without photolithography, it is possible to measure not only the thermal conductivity but also the heat capacity of very thin films. It is shown in addition that a new type of teststructure can drastically ease the measurement of conventional bulk materials by the 3Omega-methode. These two results are obtained with a poor thermal contrast and show the potential of the 3Omega-methode for further developments and uses.

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