

THIN FILM CHARACTERIZATION BY PICOSECOND ULTRASONICS ON HIGH CURVATURE SURFACES

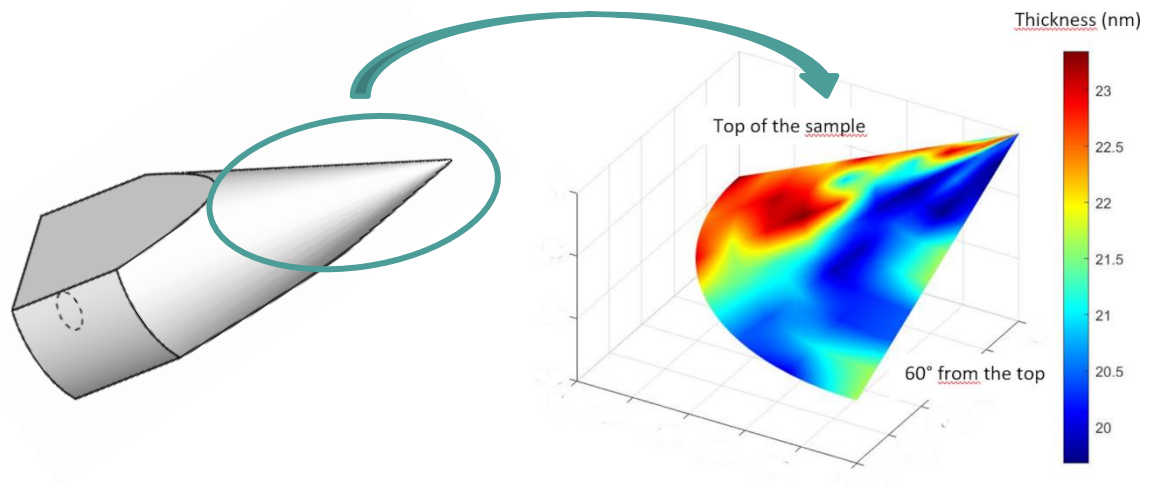
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Compared to other techniques of thickness measurement such as ellipsometry or the Calo tester, picosecond ultrasonics presents the unique advantages to be contactless, nondestructive, and able to evaluate the properties of complex shape samples.

In this paper, results will be presented showing how accurately and fastly the thickness of a coating can be evaluated even in highly curved surfaces.

Moreover, this paper will also deal with the versatility offered by the picosecond ultrasonics technique. As soon as photo-generation and photo-detection are effective on the sample, many parameters can be studied. First, besides thickness measurement, picosecond ultrasonics also allows the elastic properties measurement of thin films, multilayers and nanostructures, and the evaluation of adhesion properties. Second, this technique proved to be efficient on a large diversity of materials of which some examples will be given. Third, it will be shown how our system is sufficiently flexible to ensure relevant results, even for traditionally tricky conditions such as high curvature surfaces.



Mapping of the thickness on the conical part of the sample

Keywords: picosecond ultrasonics, material characterization, non-destructive testing, highly curved surfaces