

# **ADVANCES IN EXPERIMENTAL MECHANICS: FROM PHOTOELASTICITY TO NANOSPECKLE TECHNIQUES**

by  
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## **ABSTRACT**

In the early years of his distinguished career, Dr. Mindlin together with Dr. Danial Drucker made considerable contributions toward the advancement of the art of photoelasticity, the prevailing, and arguably the only, technique for full-field experimental stress/strain analysis. Photoelasticity remained as the main focus of experimental mechanics research until 1950s. During the 1960s and 1970s the focus shifted towards various forms of moiré methods. Holographic interferometry made its appearance in the late 1960s but mechanical engineers did not pay much attention to this technique until 1970s. Optical speckle techniques originated in the early 1970s and blossomed in the 1980s. Digital speckle techniques dominated the experimental mechanics scene during the late 1980s and 1990s. And in the 2000s micro- and nano-experimental mechanics technique were developed by taking advantage of the fine resolution of electron microscopes or atomic force microscope. This paper traces the history of these developments and gives a detailed description and the latest development of an electron speckle technique using nanoparticles.

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