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Interferometry XV: Techniques and Analysis

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Editors

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Introduction

We thank SPIE, the program committee, the authors, and everyone attending this fifteenth Interferometry conference. SPIE continues to provide a forum for exchange of ideas and the dissemination of the latest research in interferometry and related fields. As a community we come together at conferences such as this one to share not only our work, but also our professional vision. We reacquaint ourselves with old friends and meet new colleagues. The value of these conferences comes from both the professional insight we gain and the relationships we foster.

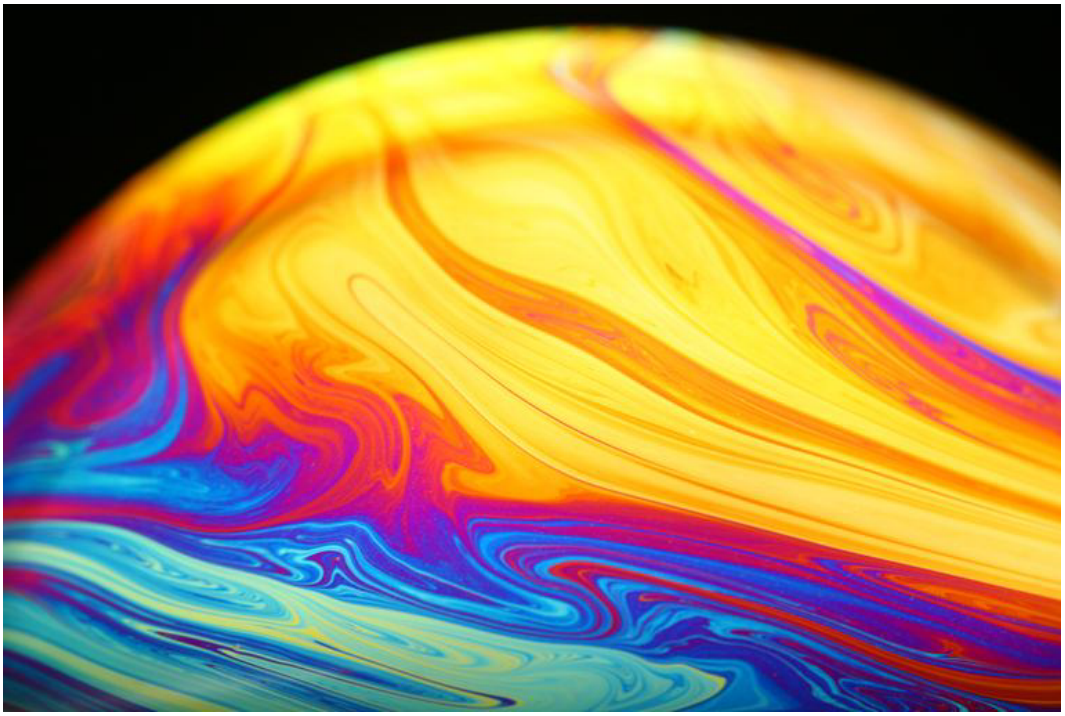
Interferometry XV, which is a continuation of the Interferometry series, consists of two complementary conferences, one dedicated to Techniques and Analysis and the other to Applications. These two conferences present recent developments in analyses and techniques that use interference and projection fringes for highly precise measurements of different objects and their application in a wide range of systems. The proceedings of the two conferences comprising Interferometry XV are published in two separate volumes as Interferometry XV: Techniques and Analysis (SPIE Proceedings 7790) and Interferometry XV: Applications (SPIE Proceedings 7791).

The growing demand for accurate and repeatable measurements of increasingly complex devices, especially in the semiconductor and MEMS industries as well as the bio- and outer space sciences has driven the field of optical metrology to develop innovative techniques that provide fast, precise, real-time assessments of a wide array of objects. While the range of techniques and technologies in interferometry is already vast, researchers strive to find solutions to new challenges that help make invisible things visible and to extend our vision further into outer space as well as closer into the nano- and biological worlds.

This conference on Interferometric Techniques and Analysis highlights developments in surface metrology and material properties, digital holography, speckle, temporal and spatial phase shifting, low coherence interferometry, multiple wavelength and fringe projection and reflection and also moiré techniques. Other topics include new developments in calibration methods for interferometric techniques, new ways to measure of aspheric surfaces, and measuring surfaces in less then ideal environments.

We are pleased to present a conference with such a large number of excellent papers. This proceedings volume contains 47 papers presented at the SPIE 55th Annual Meeting in San Diego on August 1-5, 2010. Thirty-seven of these papers were presented orally. These papers represent the work of researchers from 14 countries and four continents.

During our last conference in 2008 we had again a great time choosing our favorite fringe patterns from those submitted by attendees. Every year we receive more and more and very creative submissions. The last conference's favorite *Fringe Art* was of fringes on a soap bubble illuminated by light incident at angles higher than 80 °. This resulted in very strong and vibrant color fringe patterns as can be seen in the winning fringe pattern below.



This fringe pattern was photographed by Santiago Betancur for Melissa Palacio students from Universidad Nacional de Colombia Sede Medellín, Optics Group – SPIE Student Chapter. We enthusiastically support and encourage artistic and scientific abilities in students and young researchers. And, of course, we look forward to more stunning submissions.

Many of us are drawn to the images of fringes in our everyday lives, for observing fringes in our surroundings is, one may say, our professional deviation. With this years' conference we have continued the biannual "Fringe Art" competition to share our favorite fringe patterns. The winner will be announced in the next conference proceedings.

Until the next Interferometry conference, may you continue to see fringe patterns everywhere.

Catherine E. Towers
Joanna Schmit
Katherine Creath