

# PROCEEDINGS OF SPIE

## ***Laser 3D Manufacturing III***

**Bo Gu**  
**Henry Helvajian**  
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*Editors*

**15–18 February 2016**  
**San Francisco, California, United States**

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PolarOnyx, Inc. (United States)  
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*Published by*  
SPIE

**Volume 9738**

Proceedings of SPIE 0277-786X, V. 9738

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Laser 3D Manufacturing III, edited by Bo Gu, Henry Helvajian, Alberto Piqué, Proc. of SPIE  
Vol. 9738, 973801 · © 2016 SPIE · CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2239308

Proc. of SPIE Vol. 9738 973801-1

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Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Laser 3D Manufacturing III*, edited by Bo Gu, Henry Helvajian, Alberto Piqué, Proceedings of SPIE Vol. 9738 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781628419733

Published by

**SPIE**

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) • Fax +1 360 647 1445

SPIE.org

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# Industry Panel on 3D Printing: Outlook and Opportunities



*Industry panel in session*

Kick off the 3D conference with this informative business session.

Market analysts valued the global 3D printing market at \$2.3B in 2013 and are projecting global revenues of \$8.6B by 2020 — an impressive compound annual growth rate of more than 20% over seven years! At the same time, Siemens estimates that 3D printing will become 50% less expensive and 400% faster over the next five years.

However, 3D printing can only reach its economic potential and fulfill its promise of revolutionizing manufacturing across multiple industries if a number of significant real-world structural challenges are addressed. Hurdles to widespread implementation of 3D printing include implementation of a proper regulatory framework, provisions to protect intellectual property, and establishment of appropriate standards and certification, to name a few.

Many joined us for a panel discussion about these hurdles and how they might be overcome. Expert perspectives on 3D printing technology, cyber security, intellectual property, and other key elements were addressed, as well as the widespread adoption of 3D printing. Industry leaders shared their views on the outlook for 3D printing and what they think needs to happen for digital manufacturing to go mainstream and fulfill its promise to create a broad range of new opportunities.

## **SPEAKERS/PANELISTS:**



*3D Printing Will Rock the World* **John F. Hornick**  
Partner, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.  
(United States)



*Smart Additive Manufacturing Systems (S-AMS)* **Jyoti Mazumder**  
Univ. of Michigan (United States)



*3D Printing and the Future of Manufacturing* **John D. Murray**  
Concept Laser, Inc. (United States)



*Cyber Security Concerns in 3D Printing* **Rebecca R. Taylor**  
Senior Vice President for the National Center for Manufacturing Sciences (NCMS)  
(United States)

Panel Discussion with Q&A followed



*Award recipients with one of the conference chairs*



*This year's panelists with the conference chairs*

## Introduction

Potentially a disruptive game changer, Laser Additive Manufacturing (LAM), or 3D Laser Printing as it is commonly known, has captured the popular imagination. While LAM is still a relatively new technology and definitely needs further development, it has already been disrupting the manufacturing value chain and allowing a path to mass producing customized products. In some applications, it has already reached a tipping point of maturity. However, to fully reach LAM economic potential and to fulfill its promise to create wealth it takes much more than just pure technological development. There are enormous challenges remained to be tackled: regulatory framework, intellectual properties, product liabilities, standardization and certification, cyber security to name just a few.

The Laser 3D Manufacturing Conference at Photonics West was very unique. It provided a forum for professionals from multiple disciplines to share and discuss the latest advances in the field of laser-based digital manufacturing and the development and implementation of next generation laser-based 3D manufacturing processes. We believe this type of cross talk and communication amongst conference speakers and attendees from all fields related to LAM (which include material science, laser processing physics/chemistry, mechanical engineering, software and designing tools, modeling, characterization and metrology) is not only necessary for maturing the field but also very much needed to spark new ideas.

To further facilitate this goal of exploring and pushing this new technology to its full potential, realizing the economic opportunity across multiple industries for service providers, systems manufacturers and photonics companies, and providing a realistic assessment of how digital manufacturing technology, applications, and markets will evolve in the near future; we assembled an industry panel on 3D Printing Manufacturing for the first time within the conference. Leaders from various areas gave their perspective and outlooks on this very exciting evolving field. Experts advised us to certify as we build products due to the prohibitive high cost of design change. They also warned us that business models will evolve and that the way of making products will be fundamentally changed. These changes will present challenges to current intellectual property laws. They will also bring concerns over the cyber security. Overall, this inaugural industry panel was well attended and received. It was a success.

Finally, we would like to thank all conference speakers, panelists, and attendees for their contribution to the conference. We hope that more people will come and share their work at this unique platform next year. After all, this is what this conference is all about — it is for you.

**Bo Gu**  
**Henry Helvajian**  
**Alberto Piqué**