WORKSHOP ON ADDITIVE MANUFACTURING FOR MEDICAL APPLICATIONS

Sponsored by ASTM Committee F04 on Medical and Surgical Materials and Devices

May 3, 2016
Grand Hyatt San Antonio
San Antonio, TX

Workshop Chairs: Terry Woods
U. S. Food and Drug Administration
Silver Spring, Maryland, USA

Rod McMillan
DePuy Synthes Trauma
West Chester, Pennsylvania, USA

Jon Moseley
Wright Medical
Memphis, Tennessee, USA

TUESDAY, MAY 3rd, 2016

12:00 PM
Opening Remarks

Session 1: Design, Manufacturing, and Cleaning of AM Components

Session Chair: Rod McMillan

12:10 PM
Design for Manufacturability in Metals Additive Manufacturing
F. Medina, S. Levesque, D. Robinson, and A. Haines, Buffalo Manufacturing Works, Buffalo, NY, USA

12:25 PM
Early Examples with Additive Manufacturing Models for Planning of Complex Joint Replacement Surgery
H. Haider and K. Garvin, University of Nebraska, Omaha, Nebraska, USA
12:40 PM
Results of Studies of Ultrasonic Parameters – Potential Impact for Cleaning of Additive Manufactured Medical Devices
E. Kanegsberg and B. Kanegsberg, BFK Solutions, Pacific Palisades, CA, USA

12:55 PM
Measuring Patient-Matched Cutting Guide Design Variability in Total Knee Arthroplasty
J. Coburn, U. S. Food and Drug Administration, Silver Spring, Maryland, USA

1:10 PM
Standards Review for Cleaning and Sterilization of Additive Manufactured Metal Medical Devices
E. Kanegsberg and B. Kanegsberg, BFK Solutions, Pacific Palisades, CA, USA

Session 2: Materials Qualification and Characterization

Session Chair: Jon Moseley

1:25 PM
Opening Remarks

1:30 PM
Metal Additive Manufacturing: Overview of Materials Qualification
M. Seifi and J. Lewandowski, Case Western Reserve University, Cleveland, Ohio, USA

1:45 PM
Powder quality and characterization critical to high performance functional components in Additive Manufacturing
J. Hunter, LPW Technology, Runcorn, Cheshire, UK

2:00 PM
Challenges in Measurement and Specification of Complex Additive Manufactured Structures for the Medical Device Industry
P. Shah, R. Racasan and P. Bills, University of Huddersfield, Huddersfield, West Yorkshire, UK

2:15 PM
Areal Surface Texture Measurement of Additively Manufactured Parts
A. Townsend, L. Pagani, C. Yin, P. Bills and L. Blunt, University of Huddersfield, Huddersfield, West Yorkshire, UK

2:30 PM
Surface Finishing of Titanium Parts for the Biomedical Industry
A. Diaz, L. Winkelmann and J. Michaud, REM Surface Engineering, Southington, Connecticut, USA

2:45 PM BREAK
Session 3: Mechanical Characterization and Testing

Session Chair: Terry Woods

3:05 PM
Opening Remarks

3:10 PM
Effect of Build Orientation on Axial/Torsional Fatigue Life of Laser Sintered Ti-6Al-4V ELI
M. Di Prima, U. S. Food and Drug Administration, Silver Spring, Maryland, USA

3:25 PM
Evaluation of the Performance Effects of Machining versus Additive Manufacturing Processes on Medical Implant-Grade Titanium
V. Trafka, D. Buchanan and D. Lissy, Empirical Testing Corp., Colorado Springs, Colorado, USA

3:40 PM
Fatigue Properties of a Titanium Alloy (Ti-6Al-4V) Fabricated Via Electron Beam Melting (EBM): Effects of Internal Defects and Residual Stress
N. Hrabe, National Institute of Standards and Technology, Gaithersburg, Maryland, USA

3:55 PM
Development of a Selective Laser Sintered (SLS) Titanium Foam for Orthopedic Applications
D. Scholvin, D. Linton, J. Fleming and J. Moseley, Wright Medical, Memphis, Tennessee, USA

4:10 PM
Polymeric Additive Manufacturing for Applications in Orthopaedics: How Testing Standards are of Benefit
T. Gascoyne¹, L. Rodgers², J. Orrock², M. Petrak¹, 1) Ortho Innovation Center, Winnipeg, Manitoba, CA, and 2) Stratasys Inc., Eden Prairie, Minnesota, USA

Session 4: Standards for Additive Manufacturing

4:25 PM
ASTM Standards for Additive Manufacturing: F42 and F04
Rod McMillan, DePuy Synthes Trauma, West Chester, Pennsylvania, USA

4:40 PM
Panel Discussion: Standards Impact on the Regulatory Experience
M. Di Prima, J. Coburn, D. Scholvin, V. Trafka, F. Medina, J. Hunter and A. Diaz
Moderator: Jon Moseley
5:15 PM
Panel Discussion: New Standards Needs
Moderator: Terry Woods

5:50 PM
Closing Remarks

6:00 PM  WORKSHOP ADJOURNS