Chair’s Message

Recalling my first few ASM International Metro NY-NJ Chapter meetings, I was privileged to meet various engineers, doctors and other professionals from a wide field of materials careers. The guest speakers that presented at the meetings provided information about cutting edge technologies that would stimulate our members to an open discussion. I found it very informative to be able to converse with different professionals about the subjects being presented. After leaving the meetings, it peaked my interest to pursue further independent research regarding the topics.

Since then, I have always looked forward to attending the ASM Metro NY-NJ Chapter meetings to broaden my knowledge and insight on current technologies and recent development in materials. Come join us at the October 18, 2016 meeting where Dr. Chi-Fung Lo, Engineering Fellow at Praxair Electronic Materials, will be discussing Nodule Formation in Physical Vapor Deposition.

Larry Abernethy, BASF Catalyst, LLC
Chairman, ASM Metro NY-NJ Chapter
larry.abernethy@basf.com

Teachers Materials Camp — Your support is needed

Unfortunately, the very popular and effective Teachers Materials Camp, that had been presented for over a decade, had to be cancelled this year due to lack of funding and support. Unless there is an infusion of funds and assistance at the local level, the Metro NY-NJ Chapter Teachers Materials Camp program that strengthens the curriculum in Science, Technology, Engineering and Mathematics (STEM) at the secondary level will not be able to continue.

At these valuable, free one-week professional development workshops, middle and high school teachers learn the basics of Materials Science Technology; work hands-on with metals, ceramics, polymers and composites; and develop a greater appreciation for the importance of materials to modern life. The teachers see how to excite students about STEM subjects and to learn science concepts as they complete projects of personal worth to them.

Please get involved — Your assistance as a sponsor, contributor, volunteer or other type of participation is welcome and needed. For complete information, please email Dr. Roumiana Petrova, NJIT at: petrova@njit.edu

August 2016
Nodule Formation in Physical Vapor Deposition

Speaker: Dr. Chi-Fung Lo, Engineering Fellow
Praxair Electronic Materials, Orangeburg, NY

Physical vapor deposition (PVD) is a process to deposit thin films on substrates by Ar sputtering metallic or non-metallic targets. In the PVD process, some target atoms will locate on the substrate while others will deposit to the surrounding chamber or sputtered target surface, depending on equipment design, sputtering conditions and material properties. The materials re-deposit to the target surface may generate so-called nodules. The nodules tend to nucleate at lower erosion zone on the target surface and grow to certain size. Some are single and some are clustered. For alloy targets, the composition of the nodules may be different from the target and always contains Ar. During sputtering, the nodules grow layer by layer and are likely to be flaked, resulting in particle generation on subscale and causing thin film defects.

This presentation discusses nucleation, growth and flaking of some materials used for semiconductor applications. It is important to understand the mechanism of nodule formation. Based on the knowledge of nodule formation, reduction of particles can be achieved by improving target properties.

Dr. Chi-Fung Lo’s biographical info appear on page 5.
Participate and reap more benefits

As a member of the ASM Metro NY-NJ Chapter, your input and suggestions are welcome and encouraged. There also are numerous benefits and opportunities available to you by increasing your level of participation.

Through meeting attendance and involvement you will meet industry experts; gain more knowledge; keep current with the latest industry developments; and make valuable contacts. Serve on a committee or the Executive Board and you can hone your organizational and leadership skills, and acquire experience to help further your career and personal development.

Plans and committees are just getting underway for the season, and you can be part of it. Just come out to a meeting and speak with any of the officers or directors about how you can get more involved. You’ll be glad that you did.

Welcome New Members & Transfers

The Metro New York-New Jersey Chapter welcomes the following New Members and Transfers:

Joan Herrero Amigo
Spain

Ms. Annemarie Appleton
Alloy Stainless Products

Stephen Cole

Michael Cooney

Matthew Hallac

Ranjiv Jain

Thomas Joyce

Deepak Kapoor

Matthew Keessing
Grayson Wagner, New Zealand

Stacey Kerwien
US Army RDECOM

Arjun Madan

Farshid Maslaki, EW Cutter

William J. McDonald, Carpenter Technology

Thierry Montfort

Mohammed Kaabiuddin
Munshi, Sr., Cape East Ltd.

Igor V. Sevonkaev
Praxair

Laura Simonetti
Charter Brokerage LLC

Dr. Jan Svec
Kuba Libri Ltd.

Zunjian Yang
Atlas Evaluation & Inspection Service

John Yorston

We are looking forward to seeing you at the meetings; and, as always, the first dinner that a new member attends is complimentary.

MS&T16
Materials Science & Technology 2016

Technical Meeting & Exhibition
October 23-27, 2016
Salt Palace Convention Center
Salt Lake City, Utah

Organizing Societies:
ASM International
The American Ceramic Society
Association for Iron & Steel Technology
The Minerals, Metals & Materials Society

“MS&T brings together scientists, engineers, students, suppliers and more to discuss current research and technical applications, and to shape the future of materials science and technology. NACE International is co-sponsoring MS&T16.”

Register online at:
www.matscitech.org
Views from the Tour  May 22, 2016
Long Pond Ironworks, West Milford, NJ

Photos courtesy of
Dr. Richard Lynch,
Lynch & Associates
and
Dr. Roumiana Petrova,
N.J.I.T.

Metro NY-NJ Chapter
**Dr. Chi-Fung Lo Biographical Info:**

1977  
B.S., Metallurgy and Materials Science, National Cheng-Kung University, Taiwan.

1979  
M.S., Metallurgy and Materials Science, National Cheng-Kung University, Taiwan.

1989  
Ph.D., Mechanics and Materials Science, Rutgers University

1979 – 1981  
Military service

1981 – 1984  
R&D Engineer, China Steel Corporation, Taiwan.

1990 – 1995  
R&D Engineer, Sony-MRC

1995 – 1999  
Sr R&D Engineering, Sony-MRC

2000 – 2015  
Sr R&D Engineer, Praxair Electronics

2016 -  
Engineering Fellow, Praxair Electronics

**Directions to the October 18th Meeting**

**Meson Madrid**  
343 Bergen Boulevard, Palisades Park, NJ 07650  
[www.mesonmadrid.com](http://www.mesonmadrid.com)  
201-947-1038

Meson Madrid is located about five blocks east of Routes 1/9/46 at the junction of Bergen Blvd (US Hwy 63) and E. Palisades Blvd. There is a direct link to Google® maps on the Meson Madrid website that will provide you with customized directions from anywhere.

Go to: [www.mesonmadrid.com](http://www.mesonmadrid.com) click on the “Directions” button at left, then look above the map and click on “Directions from anywhere Click Here”

**Coming Events**

**October 18, 2016** (Tuesday) 6:00pm  
ASM Metro NY-NJ Meeting  
Meson Madrid, Palisades Park, NJ

**Nodule Formation in Physical Vapor Deposition**  
Dr. Chi-Fung Lo, Engineering Fellow, Praxair Electronic Materials

**October 23-27, 2016**  
Materials Science &Technology 16  
Salt Lake City, Utah (See page 3)

**November, 2016** 6:00pm  
ASM Metro NY-NJ Meeting  
Date/Topic/Location TBA

**No Membership Meetings held during the months of December or January.**

**February, 2017** 6:00pm  
ASM Metro NY-NJ Meeting  
Date/Topic/Location TBA

**March 15 , 2017** (Wednesday) 6:00pm  
Joint Meeting of AWS NJ Section and ASM Metro NY-NJ Chapter  
**Topic to be announced**  
Pantagis Renaissance/Snuffy’s 250 Park Ave, Scotch Plains, NJ

Events and speakers are subject to change. Please check the Chapter website for updates and information.

Your suggestions for speakers and topics for technical presentation are welcome and encouraged.