# Welcome to the Resist TWG Meeting

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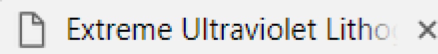

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- IEUVI Objectives
- Meetings*
- TWG

# International EUV Initiative

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# IEUVI TWGs

Welcome to the TWGs Member Section - This section will be opened to registered attendees only.

IEUVI Chair: Paolo Gargini, Standford University

- **Resist**

  -TWG Chair: Greg Denbeaux, SUNY Poly CNSE

  - 2017-9-10 Agenda
  - Register click here

- **Panel Discussion: Will the advent of 3D monolithic integration eliminate the need for higher lithographic resolution?**

  - Organized by: Paolo Gargini, Standford University

  - 2017-9-10 Agenda
  - Register click here

- **Pellicle, inspection, and cleaning**

  -TWG Chair: Emily Gallagher, imec

  - NO pellicle TWG in September 2017

- **Administrator:** Yu-Jen Fan, ASML

  - **Archive**
    - Source
    - Optics Contamination and Lifetime

Return to home page

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Extreme Ultraviolet Litho ×

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- IEUVI Objectives
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* Need access? Send mail to Paolo Gargini

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## RESIST TWG Meetings

**February 26, 2017**
1 Resist challenges and potential research areas by Oktay Yildirim, ASML
2 EUV resists: When more may be less by Anna Lio, Intel
3 IBM EUV resist-metal hardmask interactions by Dario Goldfarb, IBM
4 Shot noise, LER and limitations of current EUV photoresists by Anindarupa Chunder, Globalfoundries
5 Resist exposures with low energy electrons by Ruud Tromp, IBM
6 Electrons and holes in the EUV exposure mechanism by Robert Brainard, SUNY Poly
7 Stochastics across wavelength by Alex Vaglio Pret, KLA-Tencor
8 Relationship between photon shot noise and secondary electron blur in line edge roughness formation by Takahiro Kozawa, Osaka University
9 Nanoparticle EUV photoresist studies by Kazuki Kasahara, JSR/Cornell University
10 Multi trigger resist by Alex Robinson, University of Birmingham
11 Positive and negative tone crosslinked organic molecular resists: An update and outlook by Cliff Henderson, University of South Florida
12 Comparison of EUV and electron reactivity for metal oxalate photoresists by Greg Denbeaux, SUNY Poly

**October 23, 2016**
1 TWG Agenda by Yu-Jen Fan, Globalfoundries/SUNY
2 EUV Resist Stochastics by Anna Lio, Intel
3 Understanding patterning variability: The Multivariate Poisson Propagation Model by Patrick Naulleau, CXRO LBNL
4 Fundamental aspects of RLS trade-off and photon shot noise of CAR and PSCAR by Seiichi Tagawa, Osaka University
5 Analysis of metal resist used for extreme ultraviolet lithography by Takahiro Kozawa, Osaka University
6 Update of resist outgas testing at EIDEC by Eishi Shiobara, EIDEC
7 Development status of patterning enhancement material for EUV lithography by Kazuma Yamamoto, Merck
8 Gas phase synchrotron experiments probing EUV resist photochemistry by Frank Ogletree, LBNL
9 Photoelectron scattering and uncertainty in acid release in EUV by John Biafore, KLA-Tencor
10 The role of secondary electrons in EUV resist exposure mechanisms by Greg Denbeaux, CNSE SUNY Poly

**February 21, 2016**
1 TWG Agenda by Yu-Jen Fan, SUNY Poly SEMATECH
2 Recent progress in nanoparticle photoresist development for EUV lithography by Kazuki Kasahara, Cornell University/JSR
3 RECENT DEVELOPMENT STATUS OF EUV RINSE by Tatsuro Nagahara, EMD Performance Materials
4 Accelerating Fab Integration of Metal Containing Resists by Jason Stowers, Inpria
5 ADVANCES IN ALTERNATIVE PHOTO MATERIALS FOR HVM EUV LITHOGRAPHY by DANILO DE SIMONE, imec
6 Status update on outgassing of alternative resists by Gijsbert Rispens, ASML
7 Update of Resist Outgas Testing at EIDEC by Eishi Shiobara, EIDEC
8 Considerations for resist outgas testing with EUV and hydrogen at NIST by Shannon Hill, NIST
9 IBM Outgas Update by Dario L. Goldfarb, IBM
10 Fundamental aspects of sensitivity enhancement and RLS trade-off of chemically amplified EUV resist by Seiichi Tagawa, Osaka University
12 Molecular resists for EUV lithography by Alex P.G. Robinson, University of Birmingham
13 Is an EUV Film Quantum Yield of 30 Possible? by Greg Denbeaux, SUNY Polytechnic Institute
14 What Don't We Know About EUV Exposure Mechanisms? by Robert L. Brainard, SUNY Polytechnic Institute
15 IEUVI Resist TWG Summary by Yu-Jen Fan, SUNY Poly SEMATECH

Extreme Ultraviolet Litho

ieuvi.org/TWG/Resist/IEUVI_Resist01.htm

Update from More Moore By S. Tedesco
University of Wisconsin EUV Exposure Stations By P. Nealey
EUV Resist Specification Roadmap By Hah (Samsung)
EUV Resist Screening Data Table By Leeson (Intel)
TOK Resist Development Status for EUV Lithography By K. Ohmori
IEUVI TWG Update-Resist Evaluation By T. Wallow, B. Lafontaine
Electrodelss Z-Pinch EUV source for Resist Outgassing & Exposure Studies By P. Blackborow
Tools for "In-House" Resist Characterization under EUV exposure By C. Wies, R. Lebert
EUV Stimulated Photoresist Outgassing By C. Hughes
Brief Regional Update: MEDEA Excite project By M. Goethals

**November 10, 2005**
Agenda

**Presentations**
Welcome & Introductions of Charter, Goals for Resist TWGs By Dean
Outgassing Round Robin Results By Intel/Yeuh
Outgassing Round Robin Results By H. Oizumi
Outgassing Round Robin Results By C. Vannuffel
Resist Round Robin Outgassing @ ELETTRA By M.Bertolo, P. Lacovig, L. Rumiz, D. Giuressi, R. Sergo, A. Stolfa
Update Japan/ASET By H. Oizumi, ASET
Update from More Moore By S. Tedesco
Update from MEADE/EXCITE By M. Goethals
Update from US/SEMATECH By K. Dean
New Areas for TWG Cooperation By S. Tedesco
Feedback on the ITWG Resist consortia cooperation proposal By P. Zanbergen
EUV Resist Specification Roadmap - Revised
IEUVI Resist Technical Working Group By A. Keen

**March 03, 2005**
Agenda

**Presentations**
IEUVI Resist Summary for March 4 IEUVI Meeting By Dean
Introduction to March 3 IEUVI Resist TWG Meeting By Dean
Feedback from 1st European on Resist LimitaionsBy Wolf-Dieter Domke, Infineon
Feedback from SEMATECH LER & Resist Limitation Workshops By Kim Dean
Brief Description of Outgassing Methods (5 min each) By Domke
Brief Description of Outgassing Methods (5 min each) By Keen
Brief Description of Outgassing Methods (5 min each) By Vannuffel
Brief Description of Outgassing Methods (5 min each) By Nishiyama
Brief Description of Outgassing Methods (5 min each) By Dean
Outgassing Discussion Notes By Dean
Resist Outgassing: compare methods & explore areas of cooperation By Wolf-Dieter Domke
Revised Resist Specifications By Dean
Update Japan/ASET By Iwao Nishiyama, ASET
Update from More Moore By Serge Tedesco, CEA/LETI
Update from MEADEA/EXCITE By Wolf-Dieter Domke
Update from US/SEMATECH By Kim Dean
Three Topics for TWG Cooperation By Serge Tedesco
Comparison of Resist Performance at LBNL Microstepper & PSI Interference Setup By Roel Gronheid

Return to home page

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**IEUVI Resist TWG**
**Sunday September 10th, 2017**
**Monterey Marriott, San Carlos Room**

**Start: 9AM**

Paolo Gargini - Welcome

Yu-Jen Fan (ASML) – meeting agenda and organization

Toru Fujimori (Fujifilm) “Recent progress of CAR materials for EUV lithography”

Anindarupa Chunder (GlobalFoundries) “Challenges in next generation EUV resists and processes”

Alex Robinson (U. Birmingham) “Multi-trigger resist”

Greg Blachut (LAM) “Self-immolating behavior enables a chemically-amplified photoresist without acid catalysis”

**Break: 10:30**

Eishi Shiobara (EIDEC) “The update of resist outgas testing at EIDEC”

Oleg Kostko (LBNL) “Novel ways to probe EUV radiation chemistry”

Greg Denbeaux (SUNY Polytechnic) “Polymer effects on PAG acid yield in EUV resists”

Sang Jin Cho (FST) “The updated EUV pellicle development status of FST”

**Finish: Noon**