Welcome
to the
6th Levitronix
CMP Users Conference
2011 Dallas, TX
Who Is Levitronix?

→ Subsidiary of Pharos (George Hatsopoulos, Thermo Electron)

→ Founded in 2001, previously part of Sulzer, a $4B Swiss company

→ 14 years experience in MagLev Technology and Medical Pumps

→ First company with MagLev Heart Assist Pump on market

→ Pumps for Semiconductor Industry since 2001

→ Market Leader in CMP Slurry Pumps
Magnetically Levitated (MagLev) Centrifugal Pump

- Impeller IMP-1 (with encapsulated Rotor-Magnet)
- Motor BSM-1 (with Motor/Bearing Stator)
- Pump Casing PCA-1 of Pump Head CP-1
- No areas of mechanical contact!
Levitronix Product Portfolio for Semiconductor Industry

Ultra Pure Pumps

Ultra Pure Mixing Devices

LeviFlow Flowmeters

Pressure Boost Systems

Flow/Pressure Control Packages
Why do so many fab‘s specify Levitronix Pumps for their CMP Slurry Loops?
Effect of Different Pumps on Generating Slurry Particles $> 0.56 \mu m$

Data by CT Associates, Inc.
Correlation Between Large Particle Count, Microscratch Density & Surface Roughness

Oversize increase Vs Defectivity

- Normalized oversize particles
- Excellent Correlation between oversize particle increase with RMS roughness and scratch density

Data by Rajiv Singh, University of Florida
Effect of Pumps on Filter Life

Comparison of Filter Pressure Drop in a Slurry Recirculation Loop with a Bellows Pump, a Diaphragm Pump and a Levitronix Pump (SS-12 Slurry, Flow = 30 Lpm)

Data by CT Associates, Inc.
What is special about Levitronix Pumps besides the Magnetically Levitated Rotors?
Cross Section Views of Shear Stress Distribution

99% of Fluid is exposed to shear stress below 50 Pa!
8:00 am  Registration and Breakfast provided by Levitronix

9:00 am  Welcome & Introduction
          Wolfgang Dornfeld, Levitronix

9:30 am  S.V. Babu, Professor, Clarkson University Potsdam, NY
          "Slurry formulation options and challenges for defect reduction in Cu, barrier and low-k planarization"

9:30 am  Alexander Tregub, Ph.D., Intel
          "Characterization of abrasive particle distribution in CMP slurries"

10:00 am  Break provided by Levitronix

10:30 am  Budge Johl, Dow Electronic Materials
          "Importance of Monitoring Slurry and Ultrapure Chemical Flow in CMP Applications"

11:00 am  Rakesh Singh, Ph.D., Entegris
          "New Developments in the Characterization of CMP Pad Conditioners"

11:30 am  Keiichi Kimura, Professor, Kyushu Institute of Technology, Japan
          "Experimental analysis on material removal mechanism in CMP process for SiO2 film with AFM observation"

Noon  Lunch provided by Levitronix
1:00 pm **Ahmed Busnaina**, Professor, Northeastern University
  "Non Destructive Nanoparticle Removal from Submicron Structures Using Megasonics Cleaning"

1:30 pm **Jin-Goo Park**, Professor, Hanyang University, Korea
  "CMP scratches; their detection and analysis on root causes"

2:00 pm **Rob Rhoades**, Ph.D., CTO, Entrepix
  "New CMP Applications and Opportunities for Improvement"

2:30 pm **Break** provided by Levitronix

2:45 pm **Alain Chabourel**, ST Microelectronics, France
  "PTM-1 : The solution for critical slurry handling"

3:15 pm **Rajiv Singh**, Professor, University of Florida
  "Quantification of Particle Agglomeration Phenomena During CMP of Metals and Dielectric"

3:45 pm **Break** provided by Levitronix

4:00 pm **Patrick Levy**, Pall Corporation
  "A multi-step approach to developing filtration solutions for 22nm processes and beyond"

4:30 pm **Gerfried Zwicker**, Professor, Fraunhofer Institute, Germany
  "Power Device fabrication Using CMP"

5:15 pm - **Reception and Raffle Drawing**

6:30 pm **Location**: The Westin Park Central Dallas - Laurel’s Room
Thank You
For Your Participation!
Enjoy The Conference!