

# IONMET & ProSurf MEETING

Munich, November 14, 2007

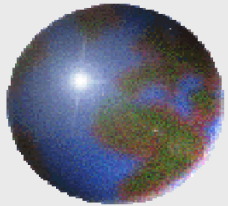
## The PCB Market with New Challenges and Opportunities.

Michael Weinhold  
EIPC Technical Director

European Institute of Printed Circuits



# IONMET MEETING



**Will plating with Ionic liquids have an impact on PCB fabrication technology?**

**Michael Weinhold**  
EIPC Technical Director  
European Institute of Printed Circuits



World Electronic Circuits Council





# WECC and IEC Standards meeting in Tokyo June, 2006

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**World Electronic Circuits Council**

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# Market segmentation in Europe

Market Segment	% of Total	Typical products
<b>Industrial</b>	<b>34</b>	Process control, industrial laser, robotics, test systems, energy supply, ultrasonic generator, safety control systems, energy-management, industrial computer, medical equipment, CNC-control units, video picture analyser, AOI, measurement & analysis equipment
<b>Communication</b>	<b>22</b>	Relay/switching stations, mobile phone, pager, radio/ tv, ham radio, transmitters, video, telemetry, GPS, automatic toll system, transponder
<b>Automotive</b>	<b>21</b>	Airbag, engine management unit, car-phone, radio, instrumentation, air-conditioning, GPS, navigation system, theft alarm, automatic transmission, diagnostic system, seat control, dynamic drive control, distance radar
<b>Computer</b>	<b>6</b>	Industrial computers, PC, PDA, translation computers, laptops, mini computers, plug in cards, memory systems, plotters, modems, net-working systems, mainframes



# Will plating with Ionic liquids have an impact on PCB fabrication technology?

## Plated surfaces needed in the PCB fabrication processes:

**Electroless Cu**

**Electroplated copper**

**Nickel**

**Electroless Tin**

**Electroless silver**

**Electroless gold**

**Electroplated gold**

**Others specials (nano technology surfaces based on organic metal)**



# Surfaces for Printed Circuit Boards

## Application fields

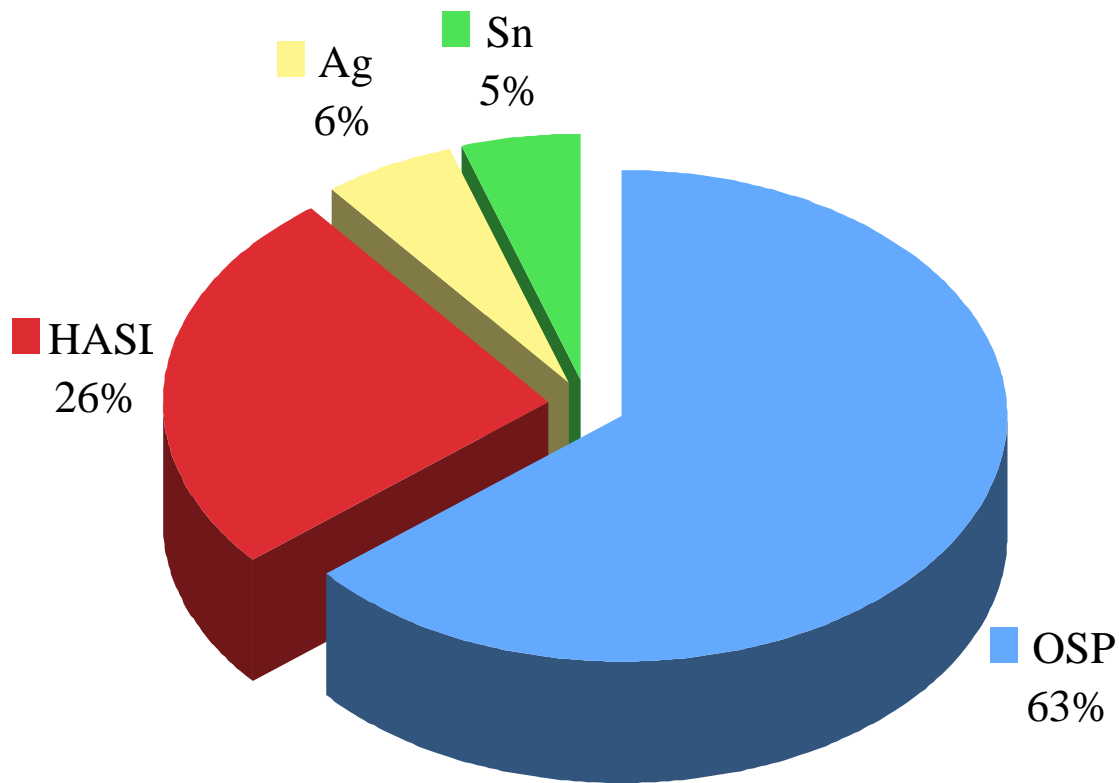
## Today

## Future

■ Mobile Phone	OSP/ENIG	(Nano Finish)
■ Automotive	Sn/Ag/OSP	(Nano Finish)
■ Telecom Base Station	Sn/Ag	(Nano Finish)
■ Industrial Electronics	HASL/Sn/Ag	(Nano Finish)
■ Military	HASL/ENIG	(Nano Finish)
■ Consumer Electronics	OSP/Ag	(Nano Finish)



# Market opportunity for different surface finishes



## Question:

What is the potential for IONIC liquid Ag Surfaces?

- OSP 106.8 MM-m<sup>2</sup>
- HASL 42.7 MM-m<sup>2</sup> (LF)
- Ag 9.6 MM-m<sup>2</sup>
- Sn 8.3 MM-m<sup>2</sup>

Market potential based on data provided by Prismark for 2006

**Focusing on surfaces that are lead free soldering compatible using nano technologies based on organic metals**



# Opportunity in PCB fabrication processes using Ionic liquids

- Electroless Cu**
  - For new technology like additive processing
  - Electroless plating of flexible circuits
- Electroplated copper**
  - Improved current efficiency
- Electro polishing**
  - Today not a major process in PCB fabrication
- Nickel**
- Electroless Tin**
- Electroless silver**
  - Higher efficiency
- Electroless gold**
- Electroplated gold**
- Others specials (nano technology surfaces based on organic metal)**



# Ag Surface Finish using IONMET technology

- Learn about electroless silver plating
- How will the process fit into the PCB fabrication process:
  - ✓ Process sequence
  - ✓ Equipment and investment
  - ✓ Environmental consideration
  - ✓ Process reliability and Maintenance
  - ✓ Cost

Thank you for your attention