



Europe - China Cooperation in Green Electronics Production Research (EC-GEPRO)

Otto Andersen¹, Idun Husabø Anderssen¹, Johan Liu²,
Teng Wang², David Whalley³, Helge Kristiansen⁴, Tom
Ove Grønlund⁴, Krystyna Bukat⁵, Jianying Liu⁶,
Xiuzhen Lu⁶, Zhaonian Cheng⁶

¹Western Norway Research Institute, ²Chalmers Technical University, Sweden, ³Loughborough University, UK, ⁴Conpart AS, Norway, ⁵TR - Tele and Radio Research Institute, Warsaw, Poland, ⁶Sino Swedish Micro integration Centre, Shanghai University

The Project

EC-GEPRO



- European Union funding (RMB 10 million/EURO 0.9 million) from:
- 6th Framework Programme for R&D, theme:
 - Nanotechnologies and nano-sciences, knowledge-based multifunctional materials and new production processes and devices
- Goal: More Europe-China collaboration on Green electronics



Western Norway Research Institute



Western Norway Research Institute cont.



Chalmers University of Technology

EC-GEPRO



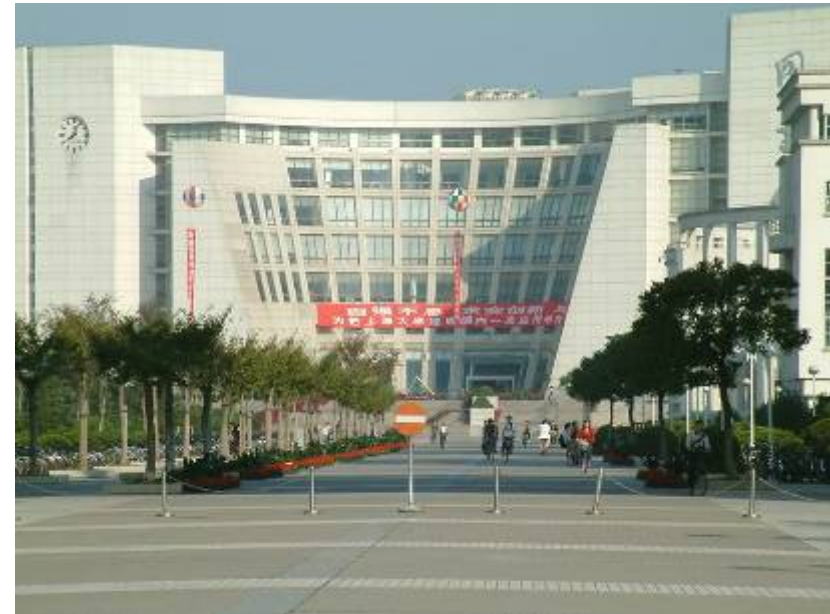
Dept. of Microtechnology and Nanoscience



CHALMERS



Shanghai University



上海大学中瑞联合微系统集成技术中心
Sino-Swedish Microsystem Integration Technology Center



Tele- i Radio Research Institute Warsaw

EC-GEPRO



09.02.2007

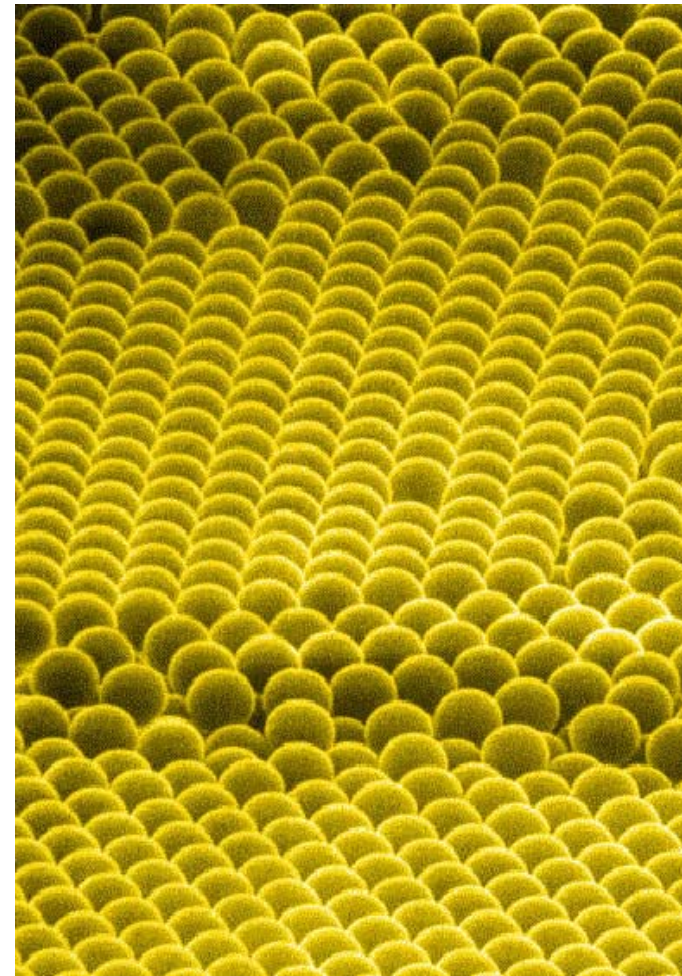
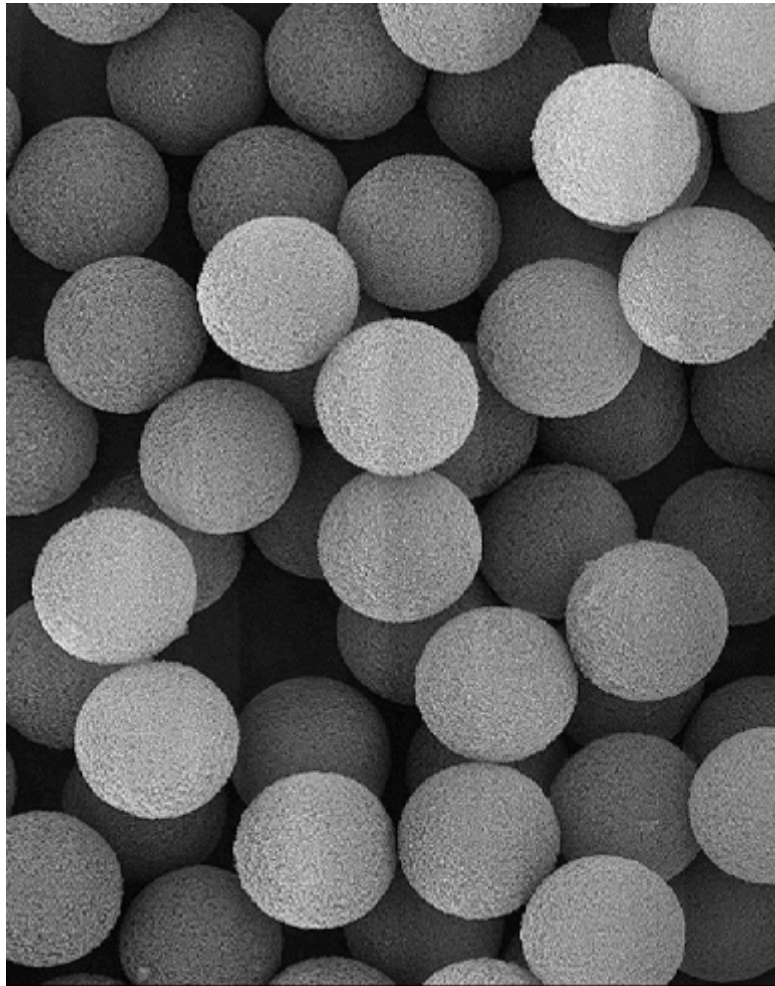
Europe - China Cooperation in Green Electronics Production Research

7

- Wolfson School of Mechanical and Manufacturing Engineering
- Centre for **Sustainable MA**nufacturing and **Reuse/Recycling Technologies (SMART)**

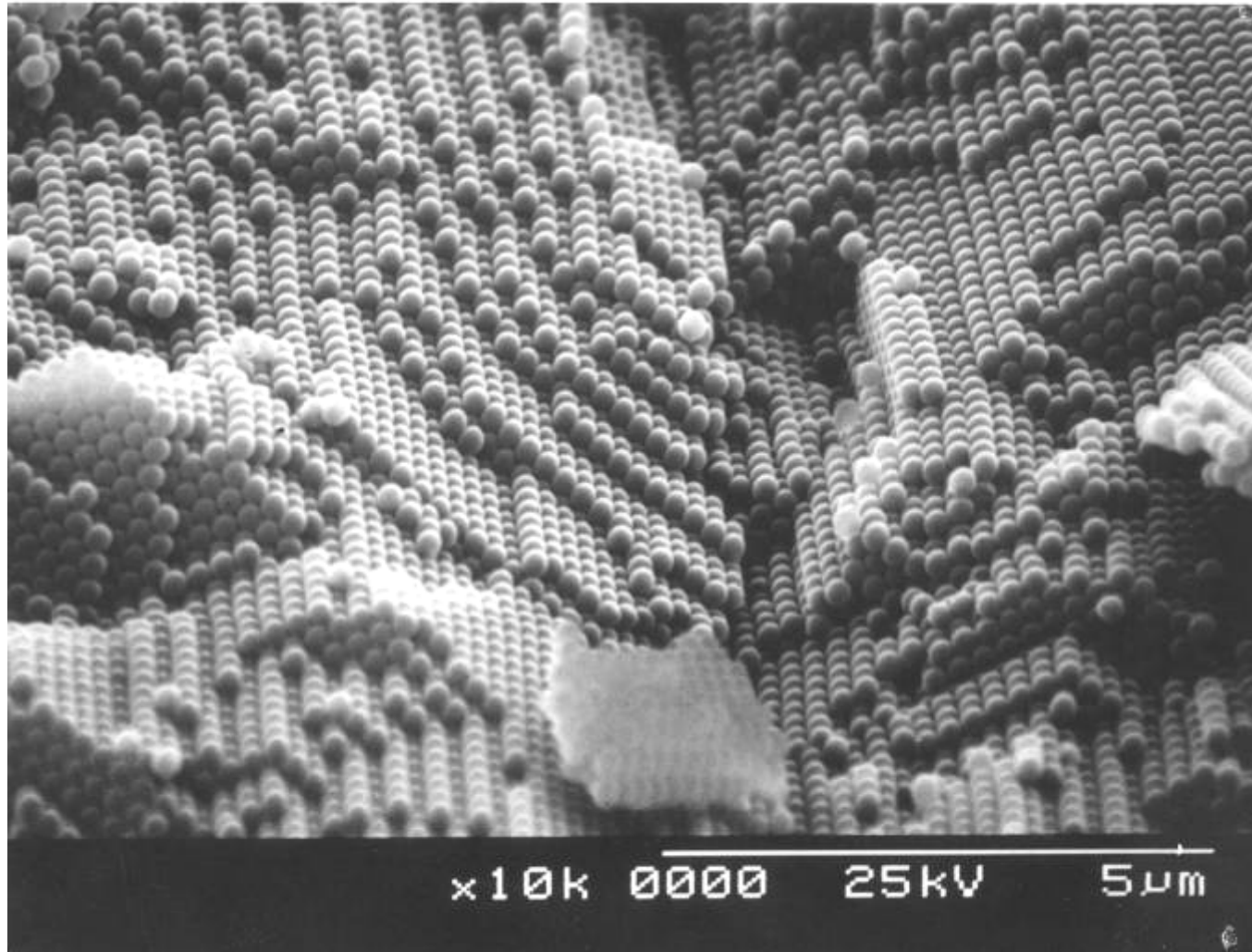


Conpart



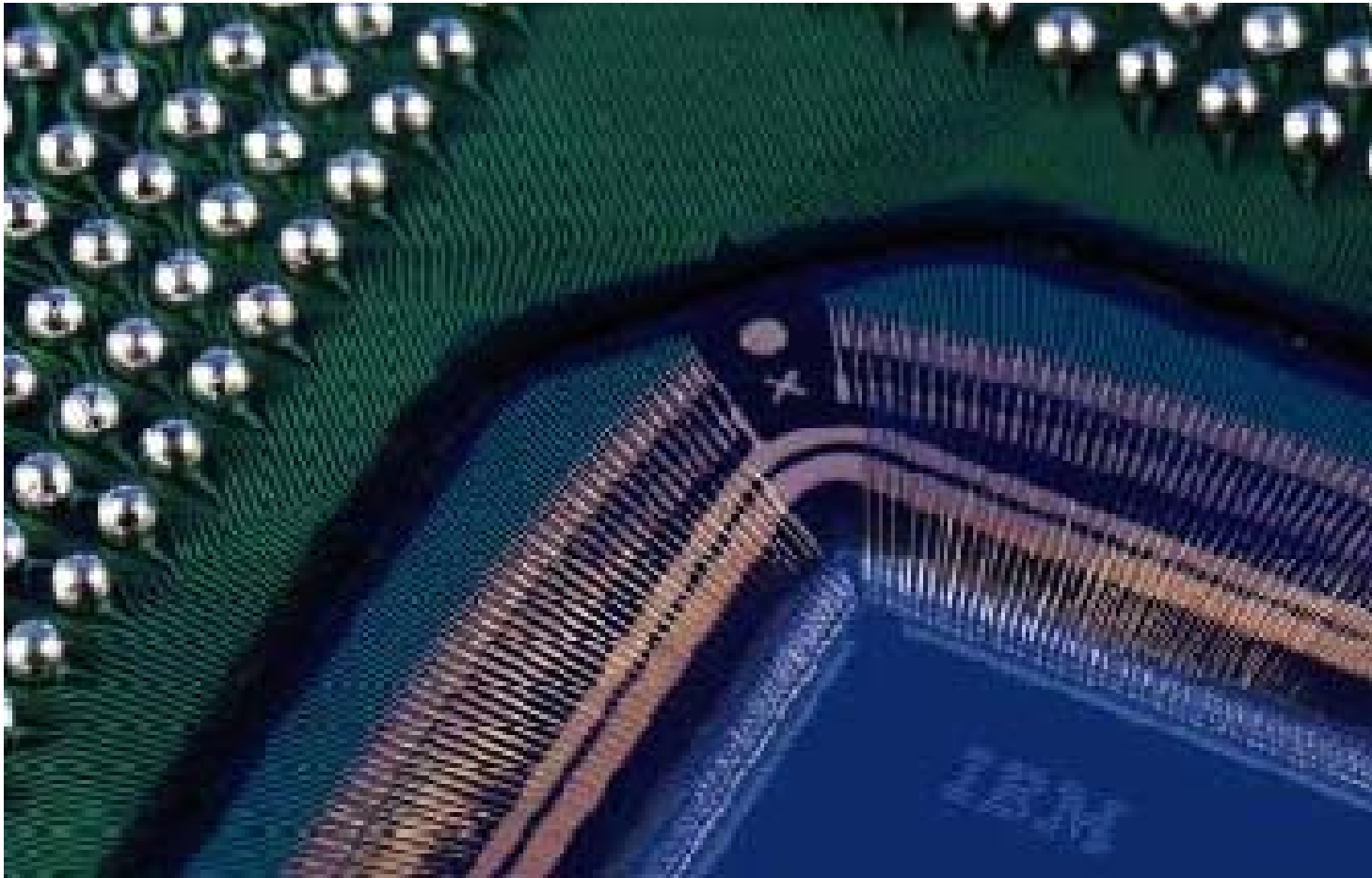
Conpart cont.

EC-GEPRO



Ball Grid Arrays

EC-GEPRO



EC-GEPRO



Research Areas

- Advance Green electronics design, production and products
- Optimizing the life-cycle properties of electronics products
- Novel materials and technologies for microelectronics integration

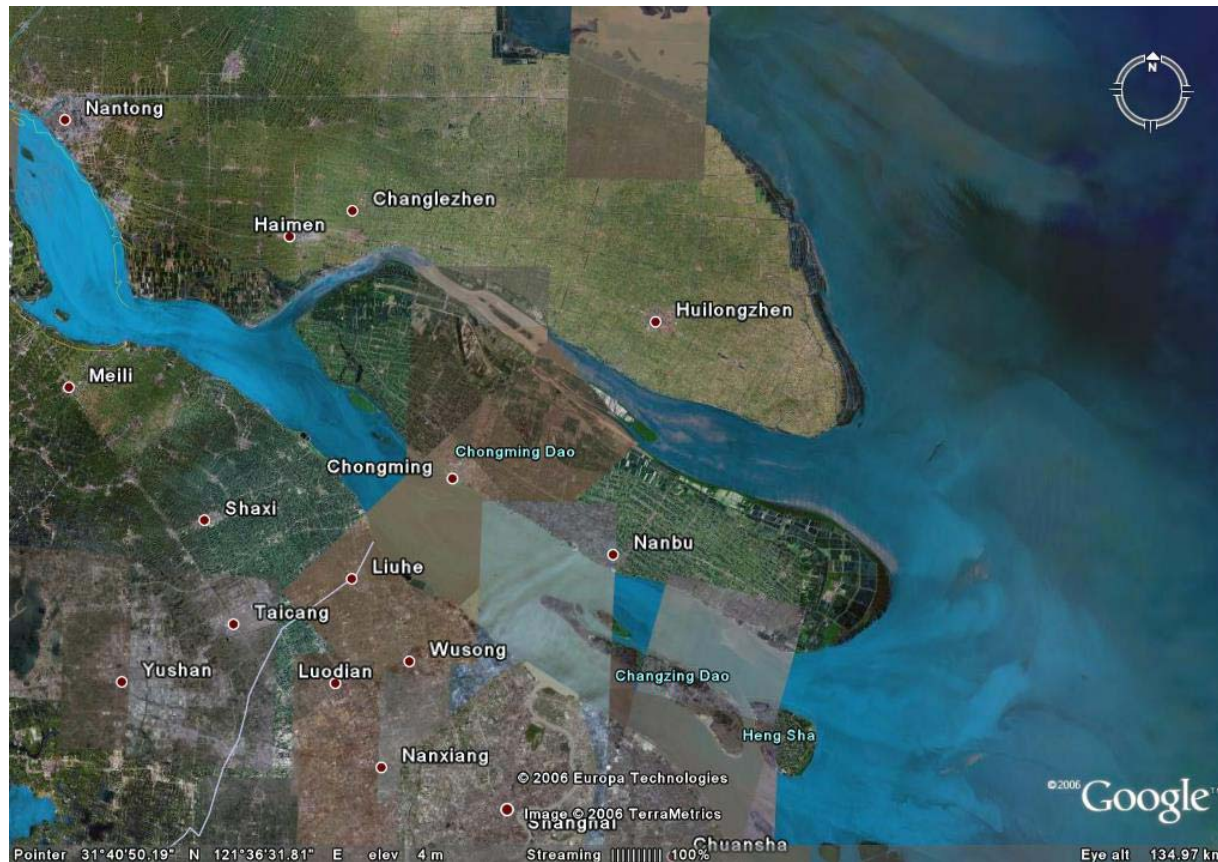
European-Chinese Research Teams



- Green electronics design
 - incorporate life-cycle environmental aspects into the design of electronic products and production processes
- Green electronics assembly
 - processes connected to assembling electronics components
 - life-cycle environmental impacts of materials being used
 - substrate interconnects
 - components
 - process equipment used in electronics assembling
- Green electronics materials
 - lead-free solder pastes, BGA
 - halogen-free substrates
 - substitution of non-recyclable thermosetting polymer based composites with recyclable materials



Green Electronics Centre of Excellence



International Conferences



- Organising two international conferences on green electronics
- To identify research needs and develop concrete research initiatives in the area of Green electronics
- Intended participation of:
 - actors in all life cycle stages of electronics:
 - design and manufacture
 - use
 - final disposal
 - a variety of sectors:
 - government
 - industry
 - research institutes/universities.

Sino-European Exchange Programme



- For students and researchers at host universities in Europe and China
- Coordinated by the Green electronics Centre of Excellence in Shanghai
- Necessary funding schemes will be developed during the 2-year project period

Web course development



SMIT Center, Shanghai University and Chalmers University of Technology to collaborate on development divided into:

- Introduction to Lead Free Solders
- Basic Process Technology for Lead Free Soldering
- Semiconductor Lead Free Flip-Chip Packaging Technology
- Semiconductor Lead Free BGA, CSP and Wafer Level Packaging Technology
- Mechanical Properties of Lead Free Solders –Tensile, Aging and Creep properties
- Mechanical Properties of Lead Free Solders – Fatigue Properties
- Failure mechanisms and reliability issues
- Life Cycle Analysis (LCA) and Future Challenges for Lead Free Technology



Thank you!