Preface

The International Symposium on Ultra Clean Processing of Semiconductor Surfaces (UCPSS) is a bi-annual conference organized by IMEC since 1992. The scope of the symposium includes all issues related to contamination, cleaning and surface preparation in mainstream large-scale Integrated Circuit manufacturing. For the first editions, typically silicon was the main semiconductor of interest. As currently other semiconducting materials such as SiGe and SiC, Ge and III-V are being considered for future generation devices, the scope was broadened to include these materials. Parallel to the fast moving CMOS industry also the photovoltaic industry has recognized the need for improvements in cleaning. In order to promote also these semiconductor cleaning activities in PV, it was decided to add, a special focused session on this topic.

The tenth international symposium on Ultra Clean Processing of Semiconductor Surfaces (UCPSS 2010) was held in Oostende, Belgium on September 20-22, 2010. The symposium was preceded by a tutorial session given on September 19th by leading experts: Rita Vos (imec), Steven Brems (imec), Marc Meuris (imec), Annelies Delabie (imec), Klaus Wolke (Wolke Consulting). The symposium proceedings cover different aspects of ultra-clean technology for large scale integration on semiconductors, cleaning and contamination control in both the front-end-of-line (FEOL) and the back-end-of-line (BEOL) processing as well as cleaning for semiconductor photo-voltaic applications. This includes studies on general topics such as particle removal using various kinds of mechanical enhancement, renoval of metallic contamination, drying, contamination control and contamination metrology. FEOL and BEOL contributions cover: surface chemistry of silicon and other semiconductors, cleaning related to new gate stacks, cleaning at the interconnect level, resist strip and polymer removal, cleaning and contamination control for various new materials and cleaning after Chemical-Mechanical-Polishing (CMP). This edition, in particular, contains an increased number of contributions dealing with non-silicon high-mobility semiconductors materials and contributions on particle removal using various kinds of mechanical force enhancement. As devices are further scaled down in size, they become increasingly fragile and sensitive to defects. As a result more contributions focus on different types of damage, collapse and defects introduced by cleaning, mostly in FEOL but also in BEOL processes.

The meeting was attended by approximately 290 participants from all over the world, with a representation from almost all leading integrated device manufacturers. This attendance is an indication for the huge cleaning challenges in future technologies.

The symposium fosters also the participation of (PhD-) students. For the fourth time a student paper award contest was organized and 2 *outstanding student contributions* were selected: those of Nick Valckx and Lena Breitenstein. The winner of the 2010 best student paper award was a contribution from Diana Tsvetanova.

The proceedings consist of four invited papers and 78 contributed papers. This symposium has been active over several years. Over the years a vaste amount of collective knowledge has been accumulated by the scientific and industrial community involved. On the occasion of this 10th edition of the symposium, the proceedings of previous editions (from 1994 onwards) have been collected on a CD-ROM, in order to improve the access to this knowledge base, particularly to those who are new in the field.

Continuous scaling and broadening of the field involves new materials and approaches, each leading to new cleaning requirements and challenges. We believe UCPSS and similar symposia contribute significantly to the search for new solutions to these new challenges. In this perspective we invite you to the 11th edition of this symposium to be held in 2012. Information concerning future and past editions of this symposium can be found on www.ucpss.org.

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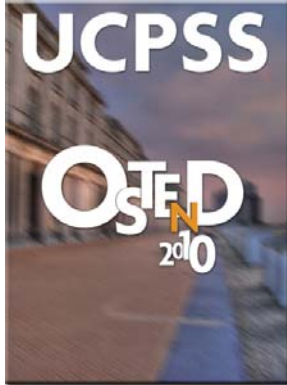Rita Vos (imec)
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