Report

The 82nd IUVSTA Workshop on Plasma-based Atomic Layer Processes

Bankoku Shinryokan, Okinawa, Japan,

December 4th - 7th, 2017

Organizing Committee

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IUVSTA Division: Plasma Science & Technique Division

Website: http://officepolaris.co.jp/JSPP2017/IUVSTA17Workshop/

The 82nd IUVSTA Workshop on Plasma-based Atomic Layer Processes was held at Bankoku Shinryokan Convention Center in Nago City, Okinawa, Japan, from December 4th to 7th, 2017. The venue Bankoku Shinryokan is a convention facility owned by Okinawa prefecture and was originally built as a venue for the 26th G8 Summit held in 2000. It is located at the tip of Cape Busena, a remote and rather exclusive resort area in the Okinawa main island, and surrounded by sea on 3 sides. As is the norm for all IUVSTA workshops, the participants were “confined” in the venue and surrounding areas of natural beauty for 4 days discussing science and technologies related to the theme of the Workshop.

The theme of the Workshop was atomic layer processes (ALPs), i.e., etching, deposition, and other surface processes with atomic-scale size control. ALPs include atomic-layer deposition (ALD) and atomic-layer etching (ALE). ALD has been widely used in semiconductor manufacturing processes and is now spreading to other industries that require highly controlled functional material surfaces. ALE is, on the other hand, now entering semiconductor manufacturing processes as new processing technologies for nano-scale devices. What distinguishes an ALP from other surface processes is its self-limiting reactions that limit the surface process only to (nearly) a single atomic layer. Processing with self-limiting reactions

allows not only atomic-scale topography control but also high selectivity and uniformity over a wide surface area of the processed material, less dependent on the structure densities. Many existing ALP technologies do not require the use of plasmas but it has been found recently that a plasma-based ALP significantly enlarges the process window by offering novel radical reactions with new energy sources (e.g., low-energy ion and/or photon irradiation) compared with the conventional ALPs based on thermal processes. Therefore, in this Workshop, the use of plasma for the latest ALP technologies was especially emphasized, with the goal set to explore fundamental science and to clarify the mechanisms of plasma-based ALPs such as plasma-based ALE, ALD, and surface functionalization of various materials. In addition to plasma-based ALPs, novel/conventional ALPs without plasmas as well as other highly controlled plasma surface processing were also presented in the Workshop.

The Workshop was held concurrently with the 10th EU-Japan Joint Symposium on Plasma Processing (JSPP2017). The number of participants, including students, of the 82nd IUVSTA Workshop was 45 and the total number of participants of both the IUVSTA Workshop and JSPP2017 was 141. The registered participants of the IUVSTA Workshop were also allowed to attend the sessions of the JSPP2017 freely. As the JSPP2017 covers a wide range of plasma science and technologies, participants of the IUVSTA Workshop were also able to enjoy presentations on low-temperature plasmas and plasma-surface interaction in general.

Financial Overview

Income	Amount (EUR)
IUVSTA sponsorship	6,000
Registration fees	11,842
Total	17,842

Expenses	Amount (EUR)
Venue	2,373
Invited speaker support	9,398
Administration fee, including website management	2,500
Reception	2,368
Bus transportation between the venue and hotels	1,203
Total	17,842