ALBA Ultra High Vacuum System status

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ALBA will be a third generation synchrotron light facility to be built near Barcelona (Spain). Commissioning of the storage ring is foreseen to start at the end of 2009. The design phase of ALBA is completed, the production phase is in full development and the first components are being installed . A 100 MeV LINAC will inject electrons into a nominal energy booster synchrotron of similar circumference as the storage ring, so that both accelerators will share the same tunnel. The storage ring, working at 3 GeV with a circumference of 268.8 m, has been designed for a maximum current of 400 mA. The lattice is based on an extended DBA structure and has a nominal emittance of 4 nm.rad. The machine has a four fold symmetry with 4 long straight sections (8 m), 12 medium (4.2 m) and 8 short (2.6 m).

The storage ring will be divided into 16 vacuum sections of two types: the unit cell and the matching cell. The sections will be separated by sector gate valves; see figure 3. The vacuum chamber will be made of stainless steel with an electron beam vertical aperture of 28mm and horizontal aperture of 72mm with a slot 10mm high and 20mm wide to connect the vacuum chamber to the antechamber where crotch absorbers distributed all along the circumference will absorb the unwanted radiation. The maximum power density (with normal incidence) is 250W/mm2.

The pumping will be by lumped ion pumps with addition of titanium sublimation pumps close to the main absorbers. The overall pumping speed is around 60000 l/s; this will maintain an average dynamic pressure of 1.10-9 mbar to achieve a beam lifetime of 10 hours at the designed current after the commissioning of the machine. No in-situ bake out is foreseen for the vacuum vessels

This report concentrates on the ultrahigh vacuum system status.

Topic: Vacuum Science & Tecnhique