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Residual gas analysis in oxygen-free Pd/Ti deposited UHV chamber

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Recently we have developed a new NEG, oxygen-free Pd/Ti. The initial pumping speeds of the oxygen-free Pd/Ti thin film after baking at 150 °C were estimated to be 3.2 L s⁻¹ cm⁻² for H₂ and 7.6 L s⁻¹ cm⁻² for CO at room temperature. The oxygen-free Pd/Ti deposition for vacuum chambers and components in soft X-ray beamlines of synchrotron radiation (SR) facility seems to be ideal because it can be partially activated by baking at 75 °C for 6 h, and its pumping speed does not decrease in the pressure region below 10⁻⁸ Pa. We applied oxygen-free Pd/Ti deposition for the first mirror (M1) test chamber of a soft X-ray branch in a new beamline BL-11 in the Photon Factory 2.5 GeV ring (Tsukuba, Japan). Then the mirror and mirror holder system were installed in the M1 test chamber. After pumping and baking at 90–110 °C for 52 hours, the pressure in the M1 test chamber reached 6.9 × 10⁻⁸ Pa. When the M1 test chamber was isolated from TMP the pressure was maintained at ca. 5 × 10⁻⁷ Pa. Analysis of residual gases in the oxygen-free Pd/Ti deposition M1 test chamber showed that amount of hydrocarbons were below detection limits and that major of the residual gas was H₂.

Footnotes

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