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Improving of sputtered titanium film for NIK ceramic chamber in TPS

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The development of the Nonlinear In-vacuum Kicker (NIK) is one of the key projects of the Taiwan Photon Source (TPS). Efficient conduction of the image current generated by the stored beam requires the deposition of a highly conductive titanium thin film on the inner surface of the NIK ceramic chamber. Based on tests involving the sputtering of a $5.5\ \mu\text{m}$ titanium film onto a $34\ \text{cm} \times 6\ \text{cm}$ ceramic substrate, the uniformity of the titanium film was controlled within 5%. The adhesion strength between the titanium film and the ceramic substrate reached 60 MPa, and the electrical resistivity was measured at $7.2 \times 10^{-5}\ \Omega\cdot\text{cm}$. This paper presents a detailed overview of the coating system, experimental methodology, and test results.

Footnotes

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