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Pumping properties of Pd/Ti non-evaporable getter film

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Non-evaporable getter (NEG) films are ideal for maintaining ultra-high vacuum (UHV) conditions in particle accelerators, owing to their uniform pumping speeds and negligible outgassing characteristics. However, the requirement for thermal activation limits the applicability of NEG films. Prolonged exposure to atmospheric conditions and repeated activation cycles lead to a gradual increase in their activation temperature. This poses significant challenges for accelerator maintenance. The Pd/Ti composite film, created by depositing a palladium (Pd) layer onto a titanium (Ti) film, enhances oxidation resistance and reduces activation temperatures. In this study, a double-layer Pd/Ti film was deposited onto oxygen-free copper (OFC) samples, and a specialized device for measuring its pumping speed was designed and constructed. Additionally, the microstructures, cross-sectional elemental distributions, surface elemental compositions, and pumping properties of the films were tested and analyzed.

Footnotes

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