

## POTENTIAL MODIFICATION OF ELECTROCHEMICAL PROPERTIES IN ANODE NIOBIUM PENTOXIDE

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The work objective is the study of potential modification of electrochemical properties in Nb<sub>2</sub>O<sub>5</sub> anode oxide films (AOF) acting as dielectrics in niobium condensers (their development is rocketing recently) and subsequent production of niobium dielectric layer with working properties close to the parameters of conventional tantalum pentoxide.

It has been found earlier [1] that by reverse connection (negative polarity on metal) injection of electrolyte protons into AOF exceeds the values found in tantalum pentoxide by several orders of magnitude. Thus – since the concentration of injected protons in oxide to a large measure defines AOF electric conduction [2] – at least one of the reasons of higher leakage currents in niobium condensers becomes clear as well as their reduction strategy: interlocking of electrolyte proton injection into AOF.

The work states experimentally that such an effect can be achieved by the incorporation of platinum metal ions (PMI) into electrolyte. It has been found that PMI-containing electrolytes sediment them onto AOF surface during cathode half-periods by sign-alternating polarization, and it results in hydrogen release as gas bubbles. It should be thus emphasized that interlocking effect is observed already by sedimentation of mere few monoatomic PMI layers.

### References

1. L. Skatkov: *Int. Conf. ACEC, Jeju, Korea 2002*, Proceedings, p. 617-618.
2. B. Bayrachny, L. Lishok, V. Gomofov, L. Skatkov: *Phys. Stat. Sol.* **115** (1989) 207-212.

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