

# Niobium oxides and niobates for high tech applications

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It is common knowledge that most technological breakthroughs are tightly related to the ability to manipulate and to engineer the properties of different materials. This ability is often sustained and catalysed by a deep understanding of the physical mechanisms that describe, for instance, their electrical or optical properties.

For the last 75 years several studies have been reporting on the physical properties of niobium oxides, but there is still many contradictory, inconsistent and insufficient information on these metal oxides. While many works can be considered important building blocks, there has been a lack of coordinated efforts and a solid foundations towards the construction of a recognised structured knowledge of these materials.

Like many electron correlated materials, Niobium Oxides show a uncommon combination of interesting physical properties. These materials can find application in solid electrolytic capacitors, catalysis, photochromic devices, transparent conductive oxides or memristors. This complexity and versatility makes it obvious that a good understanding of niobium oxides physical properties and their control is essential and urgent.

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