Deposition of highly oriented (K,Na)NbO₃ films on flexible metal substrates - DTU Orbit (07/10/2019)

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In view of developing flexible, highly textured Pb-free piezoelectric thin films, (K,Na)NbO₃ was deposited by chemical solution deposition on cube-textured Ni-W alloy substrates. After heat treatment, a strong (001)pc out-of-plane preferential orientation is created in the (K,Na)NbO₃ layer, which also exhibits a sharp in-plane texture with 45°-rotated epitaxial relation to the substrate. The microstructure of the film is strongly dependent on the heat treatment temperature: sub-micrometer grains versus up to 2μm long particles forming at 600°C and 900°C respectively. K₄Nb₆O₁₇ and (K₁−xNaₓ)₂Nb₄O₁₁ impurity phases were identified depending on the processing temperature.

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