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PZT and its derivatives exhibit a wide range of piezoelectric properties allowing their applications in transducers, actuators and sensors. However, due to the toxicity of lead for human health and environment, many studies are carried out on lead-free piezoelectric materials. Among these materials, $(K,Na)NbO_3$ (KNN)-based solid solutions seem to be promising candidates owing to their high dielectric, piezoelectric and mechanical characteristics shown by Saito *et al.* in 2004. However, reaching high density for these materials appears difficult and alkali volatilization may occur during sintering process. In order to overcome these difficulties, in the present work, $K_{0.5}Na_{0.5}NbO_3$ ceramics are sintered with spark plasma sintering technique and comparatively studied with the classical sintering technique. Their electromechanical properties are related to microstructure, density, pores distribution, stoichiometry, grain boundaries and grain size. High thickness coupling factor of 45% and interesting planar coupling coefficient of 48% are reached. To go further, by taking into account previous studies in the literature, the effect of dopants such as Mn, Co, Ta and La on the sintering behavior of KNN are investigated. Their impact on microstructures and piezoelectric properties are presented comparatively, evidencing the efficiency and the benefit of SPS sintering in this system.