

材料化学工程与纳米技术

PVA/PVAc复合黏结剂制备 $\text{Li}_{1.075}\text{Nb}_{0.625}\text{Ti}_{0.45}\text{O}_3$ 水基流延膜

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摘要

采用PVA/PVAc复合黏结剂制备 $\text{Li}_{1.075}\text{Nb}_{0.625}\text{Ti}_{0.45}\text{O}_3$ 微波介质陶瓷基片。研究了PVAc用量和固相含量对浆料流变性能以及流延膜片力学性能的影响。结果表明,随着PVAc添加量的增加,浆料的黏度和屈服应力不断下降,膜片的断裂方式由韧性断裂转变为脆性断裂。随着浆料固相含量的增大,浆料的流变模型从Bingham型转变为Casson型。SEM观察表明,膜片的微观结构非常均匀。

关键词

[水基流延成型](#) [Li_{1+x-y}Nb_{1-x-3y}Ti_{x+4y}O₃](#) [PVA/PVAc黏结剂](#) [流变性](#)

分类号

Aqueous tape casting of $\text{Li}_{1.075}\text{Nb}_{0.625}\text{Ti}_{0.45}\text{O}_3$ using PVA/PVAc co-binder

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Abstract

$\text{Li}_{1+x-y}\text{Nb}_{1-x-3y}\text{Ti}_{x+4y}\text{O}_3$ microwave ceramic tapes were prepared by aqueous tape casting using polyvinyl alcohol (PVA) and polyvinyl acetate (PVAc) as co-binder. The effects of PVAc contents and solid loadings on rheological behavior and mechanical properties were studied. The apparent viscosity and yield stress of the slurries were markedly decreased with increasing PVAc content. As the solid loading was increased, the rheological characteristics of the slurries varied from Bingham model to Casson model. The tensile test indicated that the failure characteristics of the green tapes showed a transition from ductile fracture to brittle fracture with the increase of PVAc content. In addition, the microstructure of the green tapes was homogeneous.

Key words

[aqueous tape casting](#) [Li_{1+x-y}Nb_{1-x-3y}Ti_{x+4y}O₃](#) [PVA/PVAc co-binder](#) [rheology](#)

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