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(54) Title: DOUBLE-SIDED POLISHING METHOD FOR LARGE-SIZE ULTRATHIN LITHIUM NIOBATE SUBSTRATE

(54) 发明名称: 一种大尺寸超薄铌酸锂基片的双面抛光方法

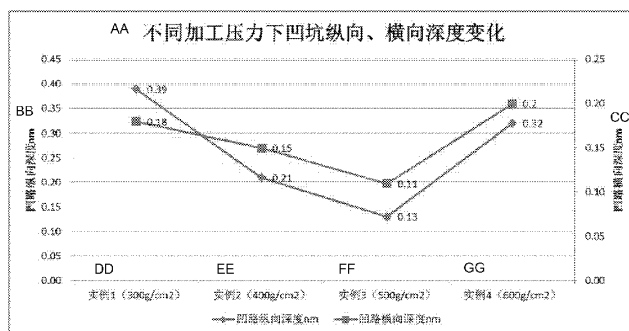


图 1

AA Changes in the depth of a depression in the longitudinal and transverse directions under different processing pressures
BB Depth of a depression in the longitudinal direction nm
CC Depth of a depression in the transverse direction nm
DD Example 1 (300 g/cm²)
EE Example 2 (400 g/cm²)
FF Example 3 (500 g/cm²)
GG Example 4 (600 g/cm²)

(57) Abstract: Disclosed is a double-sided polishing method for a large-size ultrathin lithium niobate substrate, comprising the following steps: a) grinding the cut large-size ultrathin lithium niobate wafer to obtain a large-size ultrathin lithium niobate double-sided grinding sheet having a rough structure on the surface; b) and then performing double-sided thinning and ultrasonic cleaning to obtain a large-size ultrathin lithium niobate double-sided thinning sheet having a rough structure on the surface; c) directly performing chemical corrosion in a closed container containing nitric acid, hydrofluoric acid, and a sustained release agent which are uniformly mixed to obtain a large-size ultrathin lithium niobate corroded sheet having a random disordered depression structure on the surface; and d) performing double-sided polishing by using a double-sided polishing machine and polishing solution, and then performing ultrasonic cleaning to obtain the final large-size ultrathin lithium niobate double polished sheet. According to the present invention, one-time polishing and mass production are achieved, the polishing efficiency is high, and the produced lithium niobate substrate has a high

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surface flatness. This characteristic determines that the lithium niobate substrate is not easy to break in the device application, the material utilization rate is high, and the processing yield is high.

(57) 摘要: 本发明公开了一种大尺寸超薄铌酸锂基片的双面抛光方法, 包括如下步骤: a) 将切割后的大尺寸超薄铌酸锂晶片研磨后获得表面具有粗糙结构的大尺寸超薄铌酸锂双面研磨片; b) 然后进行双面减薄, 超声清洗, 获得表面具有粗糙结构的大尺寸超薄铌酸锂双面减薄片; c) 在盛有硝酸、氢氟酸和缓释剂均匀混合的密闭容器中直接进行化学腐蚀, 获得表面随机无序凹坑结构的大尺寸超薄铌酸锂腐蚀片; d) 用双面抛机和抛光液进行双面抛光, 再进行超声清洗, 获得最终的大尺寸超薄铌酸锂双抛片。本发明一次抛光, 批量生产, 抛光效率高, 生产的铌酸锂基片表面平坦度高, 这一特征决定了铌酸锂基片在器件应用中不易破碎, 材料利用率高, 加工成品率高。