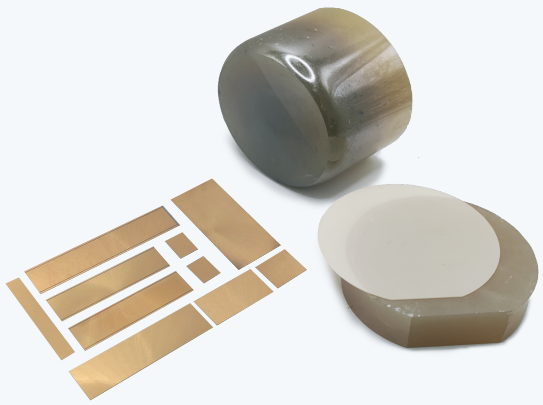
ULS
奥索·科技

压电材料产品

Piezoelectric Materials

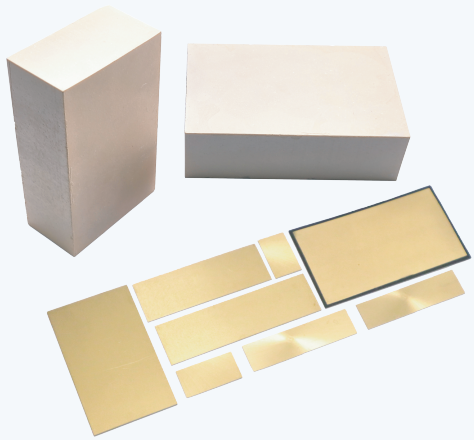
PMN-PT/PIN-PMN-PT单晶材料

PMN-PT/PIN-PMN-PT Piezoelectric Single Crystal



压电陶瓷及复合材料

Piezoelectric Ceramics & Composites



多品类生产能力 Expandable Production Ability

ULSO已经建成完备且独立自主的压电材料生产与加工产线，可以生产包括压电陶瓷，压电单晶等多种压电材料，且材料种类仍在不断拓展中，以满足不同客户的需求。

ULSO has built a complete piezoelectric material production and processing line, which can produce a variety of piezoelectric materials, including piezoelectric ceramics, piezoelectric single crystal, and other piezoelectric materials, and the variety of materials is still expanding to meet the needs of different customers.

完善的加工平台 Established Processing Platform

ULSO具备完善的材料加工平台,包括切片、加工、镀膜、极化、检测等,可以根据客户的不同需求,提供定制化的陶瓷材料，包括片状，环状，圆柱状，长条状，碗状，管状等。

ULSO has an established processing platform, including dicing, processing, coating, polarization, inspection, etc. The materials are available in different geometries, including plates, tubes, bars, rings, bowls, etc.

压电陶瓷 Piezoelectric Ceramics Properties

		硬性PZT Hard PZT		软性PZT Soft PZT				
		PZ10	PZ13	PZ17	PZ19	PZ44	PZ48	PZ57
介电常数 ε^T_{33} (ε_0)		1000	1350	1800	1900	4200	4600	5400
介电损耗因素 tanδ		≤0.004	≤0.004	<0.03	<0.03	<0.03	<0.03	<0.03
密度 Density (g/cm3)		7.6	7.6	7.7	7.9	7.9	7.9	7.9
居里温度Curie Temperature (°C)		320	315	350	350	230	220	175
机电耦合系数 Coupling Coefficients	K_p	0.56	0.57	0.63	0.65	0.7	0.68	0.7
	K_{33}	0.65	0.68	0.7	0.72	0.73	0.75	0.73
	K_t	0.49	0.47	0.48	0.49	0.5	0.5	0.5
频率常数 N_t(Hz-m)		2070	2050	2000	2100	2000	2000	2000
压电常数 d_{33} (pC/N)		250	320	360	380	650	640	730
机械品质因数 Qm		1000	1380	80	85	60	60	60

单晶材料与选型
Single Crystal Selection

提供 PMN-PT 与 PIN-PMN-PT 单晶材料，用于超声换能器设计。

PMN-PT and PIN-PMN-PT single crystals are available for ultrasonic transducer design.

可结合压电常数、机电耦合系数及温度要求选择材料。

Material selection can consider piezoelectric constants, coupling factors and temperature requirements.

晶向、极化、电极、尺寸及加工配置需结合应用确认。

Crystal orientation, polarization, electrodes, dimensions and processing depend on the application.

成像分辨率、带宽与灵敏度需结合换能器及系统设计评估。

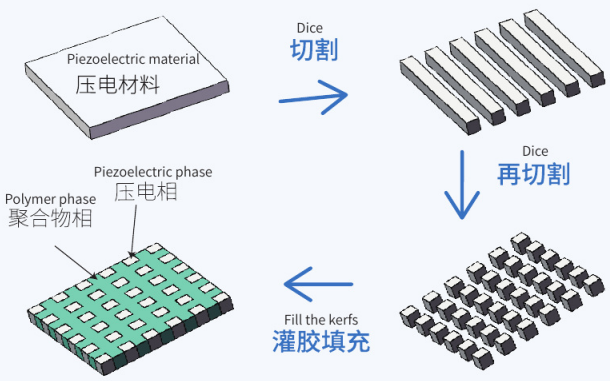
Imaging resolution, bandwidth and sensitivity require evaluation with the transducer and system design.

单晶材料参数表 PMN-PT/PIN-PMN-PT Single Crystal Properties

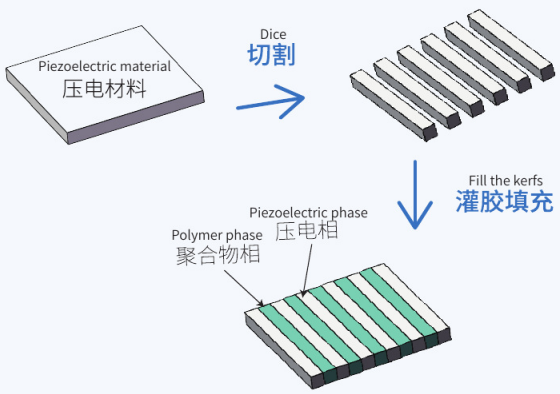
	PMN-PT	PIN-PMN-PT
相变温度(三方四方) Phase Transition (°C)	90 - 100	100 - 135
居里温度 Curie Temperature (°C)	120 - 140	140 - 200
矫顽场 Coercive Field (kV/cm)	2.5	4.5 - 7
密度 Density (g/cm^3)	8.09	8.1
压电常数 d_{33} (pC/N)	1200 - 1500	1188 - 1350
介电常数 ε^{T}_{33} (ε_0)	5000 - 7500	4000 - 6000
机电耦合系数 K_{33}	0.90 - 0.92	0.89
机电耦合系数 K_t	0.57 - 0.60	0.54

产品类型 Product Type

1-3复合材料 1-3 Composite material



2-2复合材料 2-2 Composite material



复合材料参数表 Piezo Composite Properties

	1-3 复合材料 1-3 Composites						2-2 复合材料 2-2 Composites		
	XPC-0.5	XPC-2	XPC-5	XPC-10	XPC-20	定制	IPC-3.2	IPC-7.5	定制
工作频率 Frequency (MHz)	0.5	2	5	10	20	0.5 - 30	3.2	7.5	0.5 - 30
介电常数 ε^{T}_{33} (ε_0)	2300	1530	1350	1650	2050	1000 - 5500	4200	3400	1000 - 5500
体积分数 Volume Fraction	60%	40%	35%	44%	51%	25% - 65%	88%	70%	30% - 90%
密度 Density (g/cm^3)	5.00	4.00	3.55	4.10	4.0	-	7	5.8	-
声阻抗 Acoustic Impedance (MRayl)	20	15.5	13	16	18	8 - 20	30	24	10 - 31
机电耦合系数 K_t	0.7	0.65	0.63	0.65	0.62	0.6 - 0.7	0.6	0.59	0.55 - 0.7
介电损耗 (1kHz) Dielectric Loss Factor (1kHz)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
最大加工尺寸 Maximum Dimension (mm)	70*70	70*70	70*70	70*70	30*30	-	70*30	70*30	-
建议最高工作温度 Highest Working Temp. (°C)	70°C								
电极 Electrodes	Ag, Au, etc.								