To improve the manufacturing and performance of ceramic materials Sandia National Laboratories has developed a method for synthesizing lanthanum-doped lead zirconate titanate (PLZT) nanoparticle precursors. Using room temperature aqueous-based chemistry Sandia’s method produces nanocrystalline material with superior breakdown strength and high energy density. This technical improvement confers drastic manufacturing benefits, reducing the weight, size and ultimately the cost of ceramic-based devices like capacitors. This co-precipitation method is low cost and easily scalable, facilitating the transition into commercial, military and defense arenas. The aqueous solution alleviates environmental and safety concerns and serves to further reduce manufacturing costs.

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TECHNICAL BENEFITS

• Reproducible
• Low cost and scalable
• Aqueous solution confers improved safety
• End-product exhibits superior breakdown strength and high energy density

INDUSTRIES & APPLICATIONS

• Pulsed power
• Oil exploration
• Capacitors
• Thermistors
• Transducers
• Military & defense
• Automotive