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### Preparation & pyroelectric properties evaluation of lead lanthanum zirconate titanate (PLZT) for waste heat power generation

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The combination of novel electrothermodynamic cycle based on temporal temperature variations and the pyroelectric effect is one of the potential method for utilizing the waste heat energy as a renewable energy source.

Lanthanum-modified lead zirconate titanate (PLZT) ceramics with concentration of La (5-7%), are located at and near the phase boundary between the rhombohedral and tetragonal ferroelectric phases at room temperature, which shows that these ceramics are possible as the

candidates for a further improvement of power generating performance. In this study, we propose the relaxor ferroelectric ceramic x-mol% La- modified Lead Zirconate Titanate, PLZT x/65/35 (x= 6, 7, 7.5) which is known for having a good squareness of hysteresis loop and high dielectric constant. The power generating potential is evaluated theoretically by using hysteresis loop and measurement, and experimentally by using the DSW circuit to convert waste heat to practical energy.

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