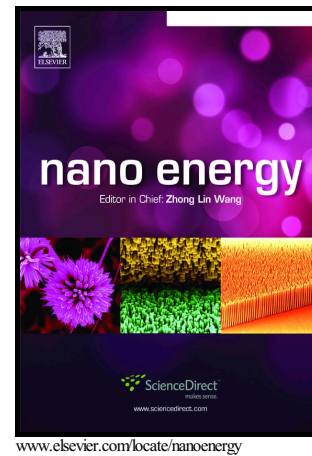


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AlN Piezoelectric Thin Films for Energy Harvesting and Acoustic Devices

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Abstract:

Aluminum nitride (AlN) thin films are widely investigated due to their unique physical properties and applications in energy harvesting devices, ultrasonic transducers, microelectronics, high-frequency wide band communications, and power semiconductor devices. This article reviews recent studies of AlN structures, focusing on their fabrication and novel applications. Various fabrication techniques used to synthesize AlN films are discussed, along with their growth mechanisms and crystal structure. The physical properties of AlN films are summarized, including their mechanical and electrical properties (in particular the piezoelectric behavior). Finally, the application of AlN thin films in the fields of energy harvesting and acoustic devices is discussed in detail. Furthermore, this review proposes perspectives for future development of AlN thin films.

¹ (Chunlong Fei and Xiangli Liu contribute equally to this paper)

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