Polyacrylate pressure-sensitive adhesives including aluminum nitride nanoparticles to improve thermal conductivity

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Light emitting diode (LED) emits light through semiconductor chip in contrast with traditional light bulb. As a result, it is drawing attention as aspects of eco-friendly and energy saving light source. For these reasons, a number of fields using LED are increasing. However, heat that LED released during operational time interrupts development of LED miniaturized and improved in the energy efficiency because heat causes decreases of life span and reliability. Therefore, a number of studies are ranging from design of heat sink to cooler proceeding for overcoming problem of heat. In this study, we investigate the effect of the addition of aluminum nitride (AlN) changing from concentration to size in acrylic pressure-sensitive adhesive (PSA) in order to solve problem of heat. The thermal and physical performances of PSA were evaluated by respectively universal testing machine and laser flash method to satisfy criteria of adhesive strength.