Recording Characteristics and Crystallization Behavior of Ge/GeCu Bilayer Applied for Write-Once Blu-Ray Media

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ABSTRACT

In this study, the Ge67Cu33(16 nm) layer and the Ge(3 nm)/Ge67Cu33(16 nm) bilayer were deposited by sputtering at room temperature and used as the recording films for write-once blue laser media. Compared with the crystallization temperature of Ge in the Ge67Cu33 film (387.8-405.1 °C), the crystallization temperature of Ge in the Ge/Ge67Cu33 bilayer can be further reduced to 347.7-382.8 °C. Moreover, the optical contrasts (@405 nm) of Ge67Cu33 film and Ge/Ge67Cu33 bilayer are determined to be 26.0% and 47.5%, respectively. This indicates that the Ge/Ge67Cu33 bilayer is more suitable for the recording film of write-once blu-ray disc (BD-R) in comparison to Ge67Cu33 film. The dynamic test shows that the optimum jitter value of the BD-R containing with the Ge/Ge67Cu33 recording film is 7.4% for 2× recording speed, revealing this film is highly potential for the fabrication of blue laser media.

Keywords: Ge/GeCu bilayer, write-once blu-ray disc, microstructure, crystallization temperature, jitter v...

REFERENCES