

COLUMN III METAL FILMS AS PHASE CHANGE MEDIA FOR OPTICAL RECORDING

ABSTRACT

Phase change media for optical storage based on semiconductors of nitrides of the column III metals. The surface of thin films (94, 96) may be metallized by irradiating with photons of energy equal to, or greater than the band gap of these materials, with power densities beyond a critical threshold value. These materials are candidates for write once, read many times storage media since the differences in the reflectivity between the metal and its corresponding wide gap nitride are very large. The written metallic phase can no longer revert back to the nitride phase and hence the media is stable. Additional advantages include suitability for use with short wavelength laser diodes. The band gap can be tuned by changing the relative fractions of the column III metals. The low absorptivity and high transmissivity, offer potential application in a multiple-recording-layer format (12).

Fig. 6