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**Relationship between Elastic Modulus and Hardness of TiN and ZrN Films Coated Using Cathodic Arc Deposition** JI HOON YANG, JAE IN JEONG, SEUNG HYUN JANG, HYE SUN PARK, Research Institute of Industrial Science & Technology — TiN and ZrN thin films are deposited on substrates, which are silicon wafer and stainless steel sheet, by using cathodic arc. Ti and Zr target are diameter of 120 mm and purity of 99.95%. The base pressure of chamber is  $\sim 10^{-6}$  torr, and the working pressure is  $\sim 10^{-3}$  torr. For nitrification of the metals, the mixture of argon and nitrogen gas is used as process gas. The films are investigated relationship between elastic modulus and hardness. The elastic modulus and hardness of the films are changed with variables of deposition process e.g. temperature and applied bias to substrate. The maximum hardness of TiN and ZrN, which are 30.14 GPa and 28.82 GPa, respectively, is achieved with applying bias of 100 V to substrates. The films coated without bias and at R.T. shows the minimum value of elastic modulus. The value of H/E of TiN and ZrN is 0.11 and 0.14, respectively.

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