عنوان مقاله:

The Effect of Unbalanced Magnetron Spattering onMechanical Properties and Strength of Titanium Nitrateand Tin Dioxide Thin Films

محل انتشار:

دومین کنفرانس بین المللی پژوهش ها و دستاوردهای نو در علوم، مهندسی و فناوری های نوین (سال: 1401)

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خلاصه مقاله:

Spattering is the process by which atoms or molecules of a substance are separated from atarget by targeting high-energy particles. Sputtering is one of the processes that requiresvacuum. In this process, first the chamber is emptied by rotary pumps and then by distributionpump or turbo molecular, respectively. The most common way to supply ions and produceplasma is through the continuous passage of an argon-like gas into the chamber, which causesthe vacuum to be slightly broken. When electrons collide with argon gas atoms, they aredecomposed into negatively charged electrons and positively charged ions, so that the primaryelectrons and secondary electrons produced by ionization re-participate in the ionization ofother gas atoms. A plasma or glowing arc is formed. Plasma is generated by DC or RF powersupply. If the voltage of the power supply is DC, it is called direct sputtering, in which thevoltage applied to the poles is constant and does not change. This mode is used to coat themetals. We usually connect the cathode to the negative terminal of the power supply, to whichabout ۵ kV is applied. In front of the cathode is a substrate or anode that connects to ground.The greater the potential difference between the cathode and the anode, the greater the energyof the electrons, which produce more electrons and ions on their way to the anode when theycollide with other atoms. Eventually the electrons move towards the anode and the ions movetowards the cathode and hit the target. Bombing is done by positive ions generated by theelectrical discharge of a gas (such as argon). this paper deals with The Effect of UnbalancedMagnetron Spattering on Mechanical Properties and Strength of Titanium Nitrate and TinDioxide Thin Films.

کلمات کلیدی:

Magnetron Sputtering, DC, RF, Mechanical Properties, Titanium Nitrate, TinDioxide, Thin Films