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Thin films of vanadium oxide compounded with silver were prepared by pulsed laser deposition using a two parallel plasmas and sequential plasmas configuration on glass and silicon substrates (100). These substrates were placed in front of the expansion line of the plasmas at a distance of 6 cm. For the array of parallel plasmas a high purity vanadium and silver targets were placed geometrically parallel and ablated simultaneously. During experiments the plasma parameters, mean ion kinetic energy and plasma density, of vanadium remain approximately constant while the plasma parameters of silver were varied in order to obtain different silver content in the deposited thin film.
For the sequential plasmas configuration different number of silver pellets were attached to the vanadium target in order to incorporate in the thin film different content of silver by varying the Ag/V ablated area ratio, for this experiments the plasma parameters, mean ion kinetic energy and plasma density, of vanadium and silver remain approximately constant.
All of these experiments were executed in vacuum chamber at working pressures close to 4x10-6 mbar and a Nd:YAG (1064nm) laser, pulse width 10 ns and a frequency of 10 Hz was employed. Afterwards, the thin films were subjected to thermal treatment at 450℃ in order to obtain crystalline oxides. The obtained materials were characterized by Raman spectroscopy showing that the thin films were composed by mixtures of vanadium oxides, silver vanadates, and silver oxides in different proportions. XPS confirmed the existence of mixtures of V2O5, V2O3, VO2 and AgVO3, as well as the presence of AgO and AgO2 for films prepared at higher silver plasma densities.

Session Classification: SHORT TALKS

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