Optimization of deposition parameters for thin film lithium phosphorus oxynitride (Lipon)

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Thin film of lithium phosphorus oxynitride (Lipon) was successfully deposited onto glass substrates by radio frequency (RF) magnetron sputtering technique from Li\textsubscript{3}PO\textsubscript{4} target. The power of the target was 150 W and optimal deposition pressure of N\textsubscript{2}/Ar $\sim$3/1 was of 2 mTorr. Analysis of the film was done by AFM, FTIR and Raman spectroscopy, which showed incorporation of nitrogen into the film as both triply, N\textsubscript{t}, and doubly, N\textsubscript{d}, coordinated form. The impedance spectroscopy measurements was carried out and revealed the ionic conductivity of the sample to be $8.6 \times 10^{-8}$ Scm\textsuperscript{-1} for optimum RF power and gas flow conditions. The electrochemical properties investigations and further development of this work will be presented at the Meeting.

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