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Layer-by-layer technique for the fabrication of organic memristors and neuromorphic systems

Erokhina S.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2015 IEEE.Layer-by-layer polyelectrolyte self assembling is a very promising techniques for the realization of organic films with nm resolution in thickness. We report here the application of the technique for the realization of active layers of organic memristors and for the realization of stochastic systems with learning properties. In particular, active channels of the memristive devices were fabricated by the deposition of alternating layers of polyaniline and polystyrene sulfonate. The advantage of the method is connected to the fact that additional doping is not required. Stochastic networks were formed on porous supports and revealed the adaptation of properties according to the applied external training procedures.

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Keywords

Adaptation and learning, Layer-by-Layer (LbL) technique, neuromorphic network, organic memristor, polyaniline