

WHAT IS INTERESTING ABOUT TRACK-ETCHED NANOPORES?

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The use of synthetic nanopores for single-molecule sensing, biomimetic systems, separation processes, and nanofluidic devices attracts a great deal of interests of scientists from various fields [1]. Considerable research activity has been focused on the nanometer-sized ion track pores in recent years. Conical ion track nanopores have been developed to approach the geometric characteristics of the ion channels in living matter [2,3]. It has been demonstrated that the conical nanopores in polymers such as polyethylene terephthalate are cation selective and possess diode-like voltage-current characteristics in electrolyte solutions.

Recently we developed a novel fabrication method which allows production of ion track membranes (ITMs) with pronounced geometrical asymmetry and highly-tapered nanopore tip ("bullet-like" shape). It was shown that the rectification properties of the asymmetric ITMs strongly depend on the pore profile [4,5]. Control over the shape of nanochannels may shed light on the mechanism responsible for their intriguing properties and opens the way to new potential applications of ITMs.

References

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