

Chemical functionalization of solid-state nanopores using Molecular layer deposition

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Molecular layer deposition (MLD) is a method for obtaining conformal ultrathin organic films using vapor-phase organic precursors, while their composition and thickness can be controlled at the molecular level. This process is based on self-saturating reactions between the organic precursors and the substrate surface. Also, in comparison with solution-based technique, it allows epitaxial growth of molecular layer on substrate and is especially good for surface reaction or coating of nanostructures. Here, we introduce the highly negative charged polyurea nanopores that formed by MLD and focused electron beam technology. The translocation of DNA and positive charged protein were successfully detected and characterized. Our results suggest that MLD can be used to nanopore and utilize as a platform for integrating chemical functionalities to solid-state nanopores.

References

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