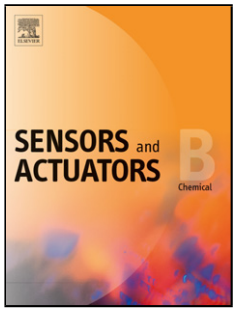

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An azamacrocycle functionalized GaAs (100) optical sensor for copper ion (II) detection in phosphate buffered saline solution

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Research Highlights

1. We fabricated a hybrid GaAs sensor for the label-free detection of copper ion.
2. Artificial organic azamacrocyclic cavities were anchored to the surface as receptors.
3. Cu^{2+} ions were selectively captured because the size of Cu^{2+} ions matched that of the artificial azamacrocycles.
4. The positive charges trapped by the cavities resulted in a PL decrease.
5. A significant Cu^{2+}–triggered wettability change was observed on Me2Cyclen functionalized GaAs.

Abstract

Copper ion is important in natural and biological processes. The present work describes the fabrication of a hybrid GaAs sensor for the label-free detection of copper ion in the near infrared region. The implemented sensing strategy relies on the

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