

国立大学法人 九州工業大学

第45回 歯工学連携講演会



Cation-sensitive fluorescent probes based on tetraplex DNA structures

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8-1A 講義室



Certain DNA sequences that are guanine- or cytosine-rich can form four-stranded structures called G-quadruplexes and i-motifs, respectively. These tetraplex DNA forms have recently received great attention because G-rich (G - guanine) and C-rich (C-cytosine) sequences are often found in a genome e.g., in telomeric DNA or protooncogene regions, and because of their potential links to mechanisms that relate to cancer and other diseases.

The unique structures of tetraplexes have also stimulated development of new bioanalytical assays. Target induced intramolecular folding of a flexible single-stranded DNA molecule (properly labeled with reporter groups) into a compact G4 or i-motif DNA structure is a structural transition leading to the development of a molecular device that generates an analytical signal.

Current activities of his research group related to above mentioned applications of DNA tetraplexes will be presented. The topics will focus on: (i) i-motif based pH probe that shows fluorescence quenching or excimer emission, (ii) G-quadruplex based quenching and FRET probes for potassium ion and their interaction with lipid monolayer at the air/water interface, and (iii) DNAzyme-based system for silver deposition.

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