

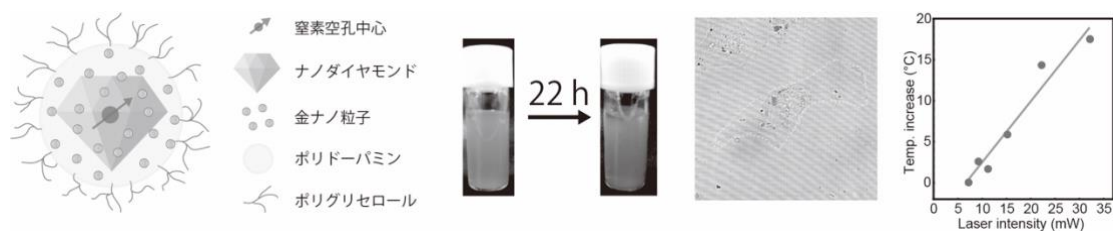
ダイヤモンドナノ粒子による細胞イメージング・センシング

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Fluorescent nanodiamonds (FNDs) are attracting attention as nanosensors that can quantitatively measure temperature, electric and magnetic fields in nanometric regions inside cells, because the quantum state of electron spins inside FNDs can be detected with high sensitivity at room temperature. In recent years, we have been studying to clarify the importance of temperature in cells and the mechanisms by which cells sense temperature and control cellular functions. For this purpose, we have developed an integrated nano-heater/thermometer capable of precisely heating inside single cells at nanoscale. In this poster presentation, we will present our recent progress on the synthesis of FND-gold nanoparticle-polymer composites and their application to intracellular nanothermometry.

Keywords : Nanodiamond; Temperature; Polymer; Cell; Imaging

蛍光性ナノダイヤモンド(FND: Fluorescent nanodiamond)内部に存在する電子スピンの量子状態は常温で高感度に検出可能であることから、細胞内のナノ領域に生じる温度、電場、磁場などを定量的に計測可能なナノセンサーとして注目されている^{1,2}。近年我々は、細胞における温度の重要性や、細胞が温度を感知し細胞の機能を制御する仕組みを明らかにするために研究を進めてきた。このような研究に取り組むために、細胞内ナノ領域の局所を精密に加熱可能な一体型ナノヒーター/温度計の開発に取り組んできた。本ポスター発表では、FND-金ナノ粒子-ポリマーコンポジットの合成と細胞計測応用に関する研究成果を発表する³。



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