

### Enhanced short-term and long-term stability of Fluorescent protein nanoparticles (FPNPs)

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Recently, Protein nanoparticles(PNPs) are utilized for the sensing. Specially, fluorescent protein nanoparticles(FPNPs) are generally used because their easy measurement. FPNPs have many advantages in terms of their surface, uniform size, and etc. However, their stability is very low. So, in this study, we tried to enhance long term and short term stability of FPNPs by using lyophilization. We measure fluorescence intensity for analyze their functional stability, and check the TEM image for monitoring their structural stability. Unlike fluorescent protein monomer, FPNPs retained the initial fluorescence activity and spherical nanoparticle structure even for 2 weeks at 4°C. To ensure stable and long term maintenance of PNPs, we use tween and sucrose as stabilizer. As a result, FPNPs were very stably maintained even for 10weeks at various storage temperatures (-20°C, 4°C, 25°C, and 37°C).