



Showcasing research from Professor Jacak's laboratory,
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New buffer systems for photopainting of single biomolecules

Advanced buffer systems are introduced to enhance the efficiency of photochemically induced surface modification at the single-molecule level. Utilization of buffers with paramagnetic cations and radical oxygen-promoting agents enables Laser-Assisted Protein Adsorption by Photobleaching (LAPAP) of fluorescently labeled oligonucleotides or biotin onto 2D and 3D acrylate scaffolds structured by multi-photon lithography. Specific cation interaction sites for cyanine, coumarin, and rhodamine fluorophores are identified through quantum mechanical calculations. A remarkable up to three-fold increase in LAPAP efficiency for cyanine fluorophores is demonstrated, while constant excitation parameters are maintained.

As featured in:



See Jaroslaw Jacak *et al.*,
RSC Appl. Interfaces, 2024, 1, 110.