SUPPORTING INFORMATION

In-vivo Lifetime Imaging of the Internal O_2 Dynamics in Corals with NIR-emitting Sensor Nanoparticles

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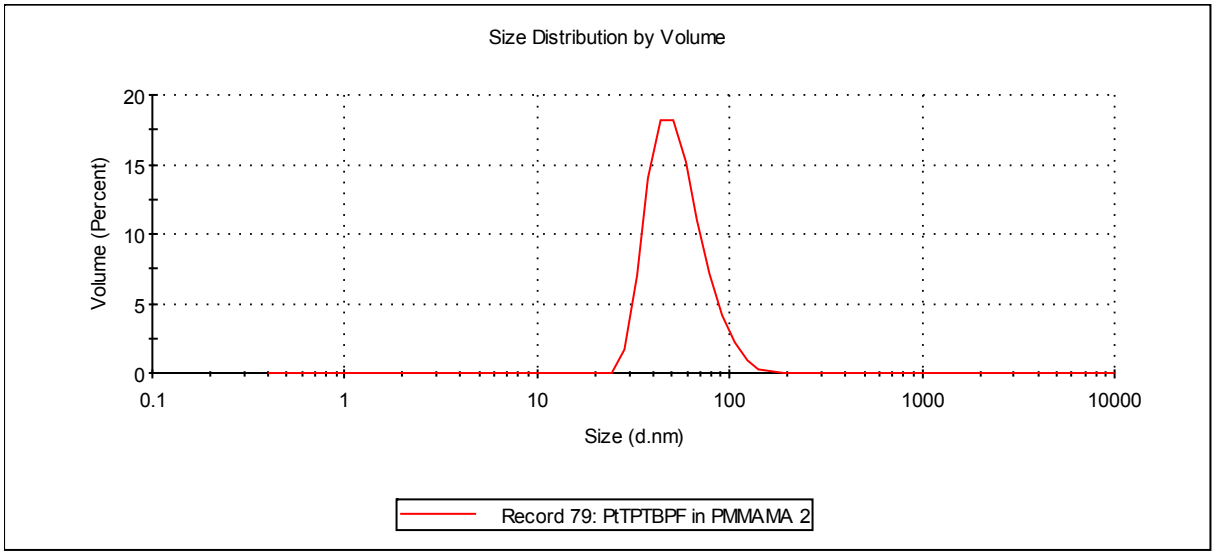
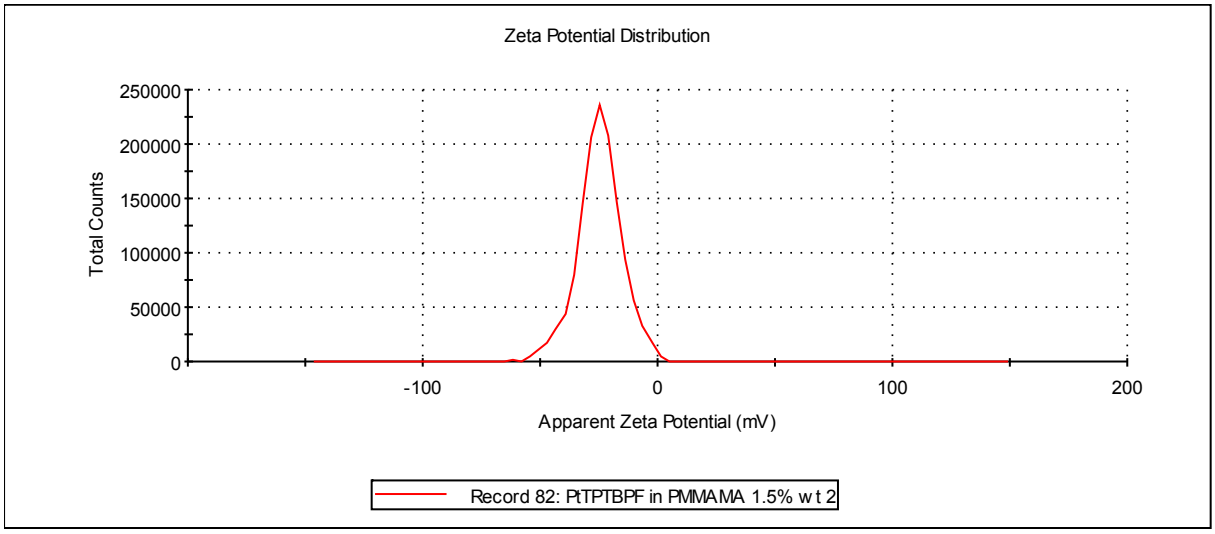
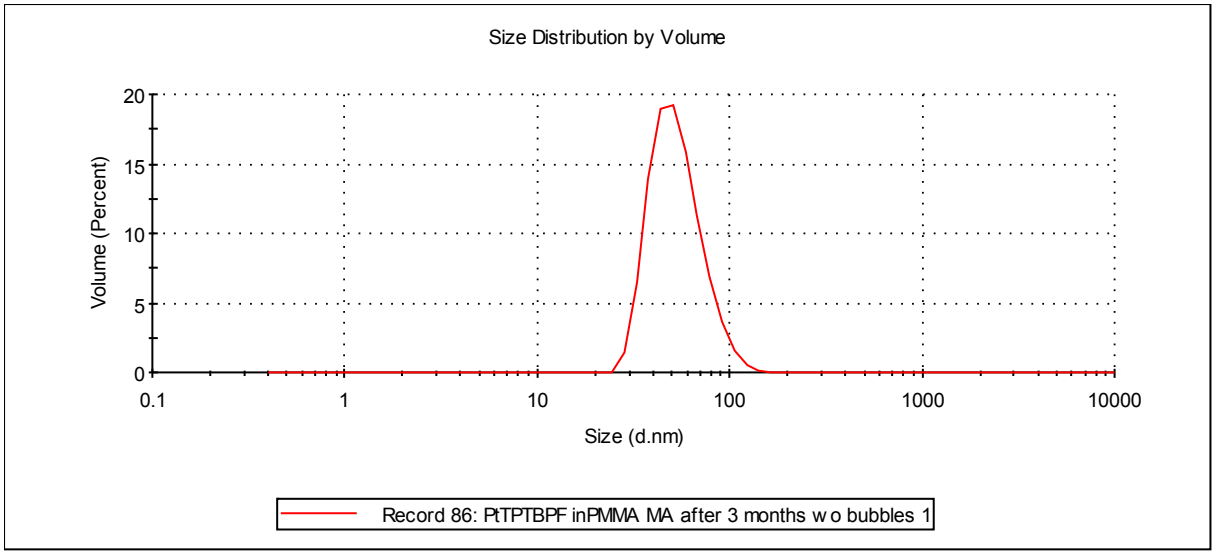
SVideo 1. The video shows injection of India ink into a polyp of the coral *Pocillopora damicornis* via a thin glass capillary. The injected dye spreads to neigboring polyps via the gastrovascular network connecting individual polyps in the coral colony. The injection is continued until the ink appears out of the mouth of neighbouring polyps. Excess ink is rapidly flushed away by the flow of seawater over the coral sample.



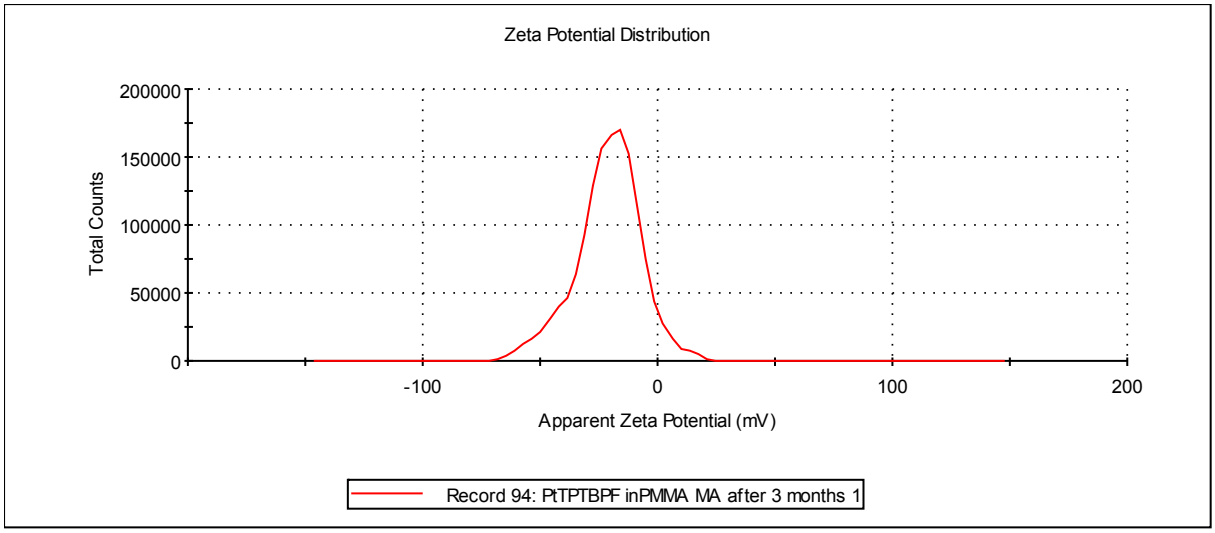
SFigure 1. Size distribution for PMMA-MA nanoparticles doped with luminescent oxygen indicator platinum(II)-tetra(4-fluoro)phenyltetrabenzoporphyrin (PtTPTBPF), as determined by dynamic light scattering measurements. Size distribution was measured directly after preparation of the particles.



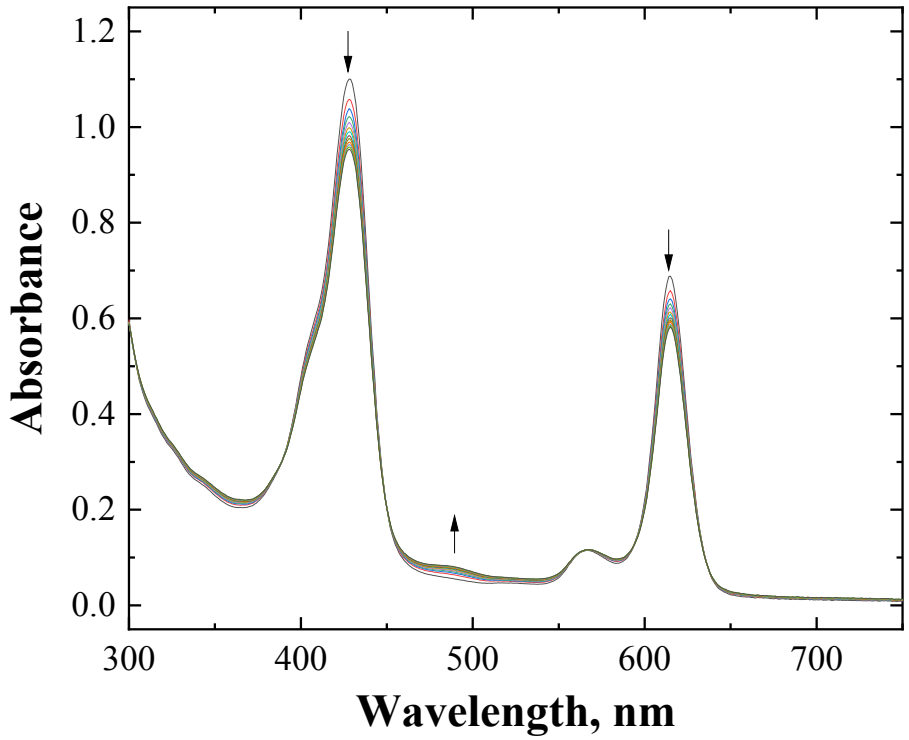
SFigure 2. Zeta potential measurement for PMMA-MA nanoparticles doped with luminescent oxygen indicator PtTPTBPF conducted directly after preparation of the particles.



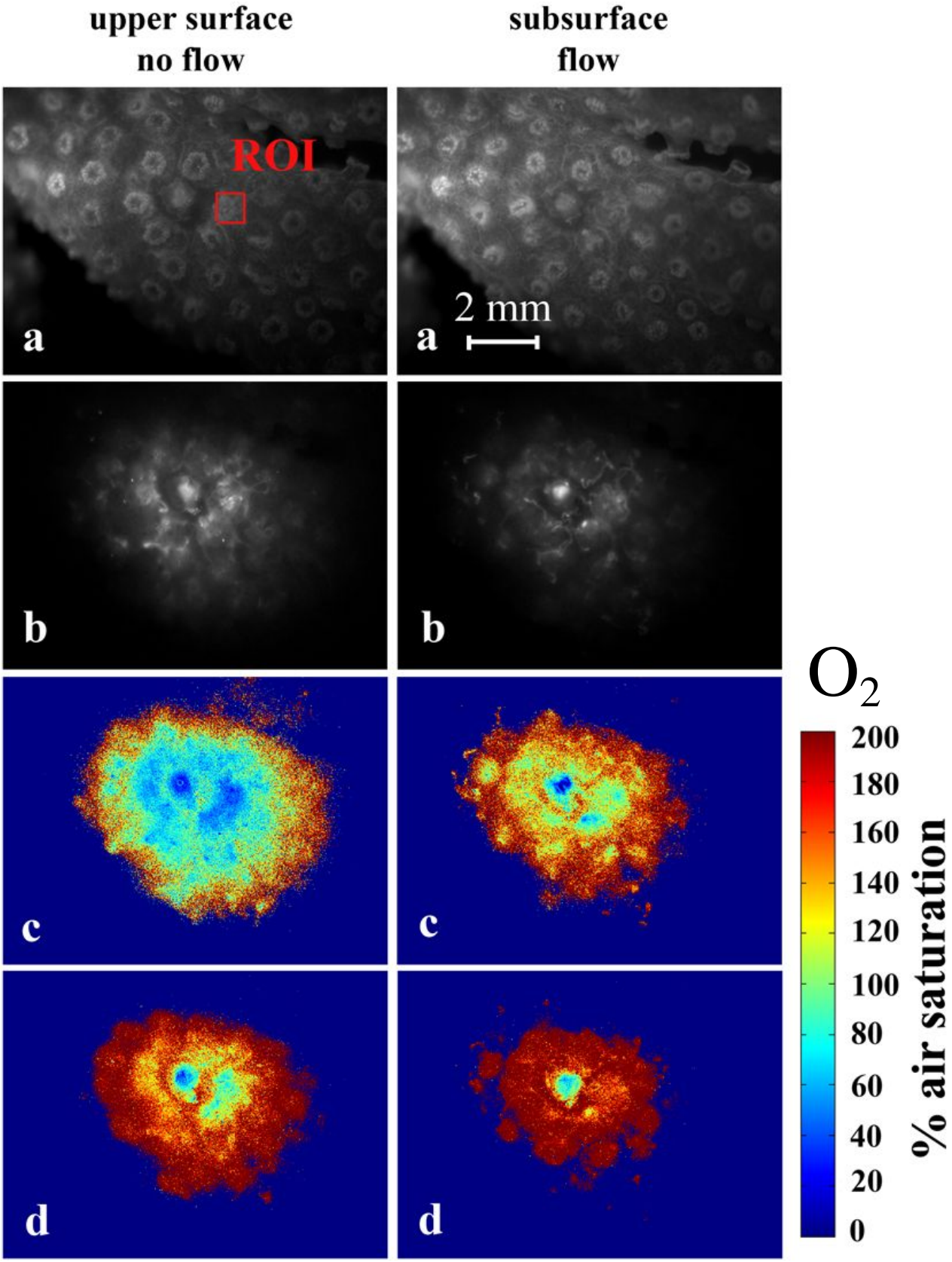
SFigure 3. Size distribution for PMMA-MA nanoparticles doped with luminescent oxygen indicator PtTPTBPF, as determined by dynamic light scattering measurements. Size distribution was measured 3 months after preparation of the particles.



SFigure 4. Zeta potential measurement for PMMA-MA nanoparticles doped with luminescent oxygen indicator PtTPTBPF conducted 3 months after preparation of the particles.



SFigure 5. Absorption spectra of PMMA-MA nanoparticles doped with the luminescent oxygen indicator PtTPTBPF in air-saturated aqueous dispersion under continuous irradiation with metal-halide lamp (photon irradiance ~7000 µmol photons·m^{-2}·s^{-1}, 400-700 nm). Total irradiation time was 60 min and the absorption spectra were measured every 5 min.



SFigure 6. Structure and O_2 distribution in the tissue of the coral *Pocillopora damicornis* imaged with the camera focus in the upper (left) and lower (right) parts of the tissue. (a) structure as revealed by an intensity image (measured during red excitation); (b) phosphorescence intensity image (1 μs delay); (c,d) pseudocolor images of the O_2 distribution before and after 170 s of light activation with a photon irradiance (617 nm) of 220-240 μmol photons·m^{-2}·s^{-1}.