Mechanical-Bending-Induced Fluorescence Enhancement in Plastically Flexible Crystals of a GFP Chromophore Analogue

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Single crystals of optoelectronic materials that respond to external stimuli, such as mechanical, light or heat are immensely attractive for next generation smart materials.[1,2] Here we report single crystals of a green fluorescent protein (GFP) chromophore analogue with irreversible mechanical bending and associated unusual enhancement of the fluorescence owing to the suppression of aggregation-induced quenching by aromatic stacked molecules in the perturbed structure.[3] Such fluorescence intensity modulations, which were observed in high-pressure studies earlier,[4] are now shown to occur as function of bending under ambient pressure, hence the study has potential implications for the design of technologically relevant tunable fluorescent materials.[5]

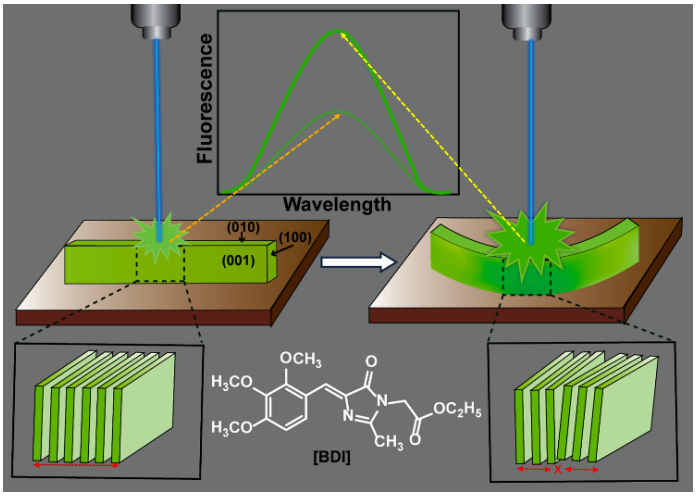

Figure 1. Depiction of fluorescence intensity enhancement in plastically flexible crystals of a GFP chromophore, BDI (bottom-middle) upon mechanical bending due to the perturbation of stacked molecular columns (bottom).

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