Halide Effects in $BiVO_4$/BiOX Heterostructures Decorated with Pd Nanoparticles for Photocatalytic Degradation of Rhodamine B as a Model Organic Pollutant

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Material	Pd (wt %)
$BiVO_4$/BiOCl/Pd	2.93
Calcined $BiVO_4$/BiOCl/Pd	3.32
$BiVO_4$/BiOBr/Pd	1.73
$BiVO_4$/BiOI/Pd	2.95

Figure S1. Pd wt% on the indicated $BiVO_4$/BiOX/Pd materials as determined by ICP-MS.

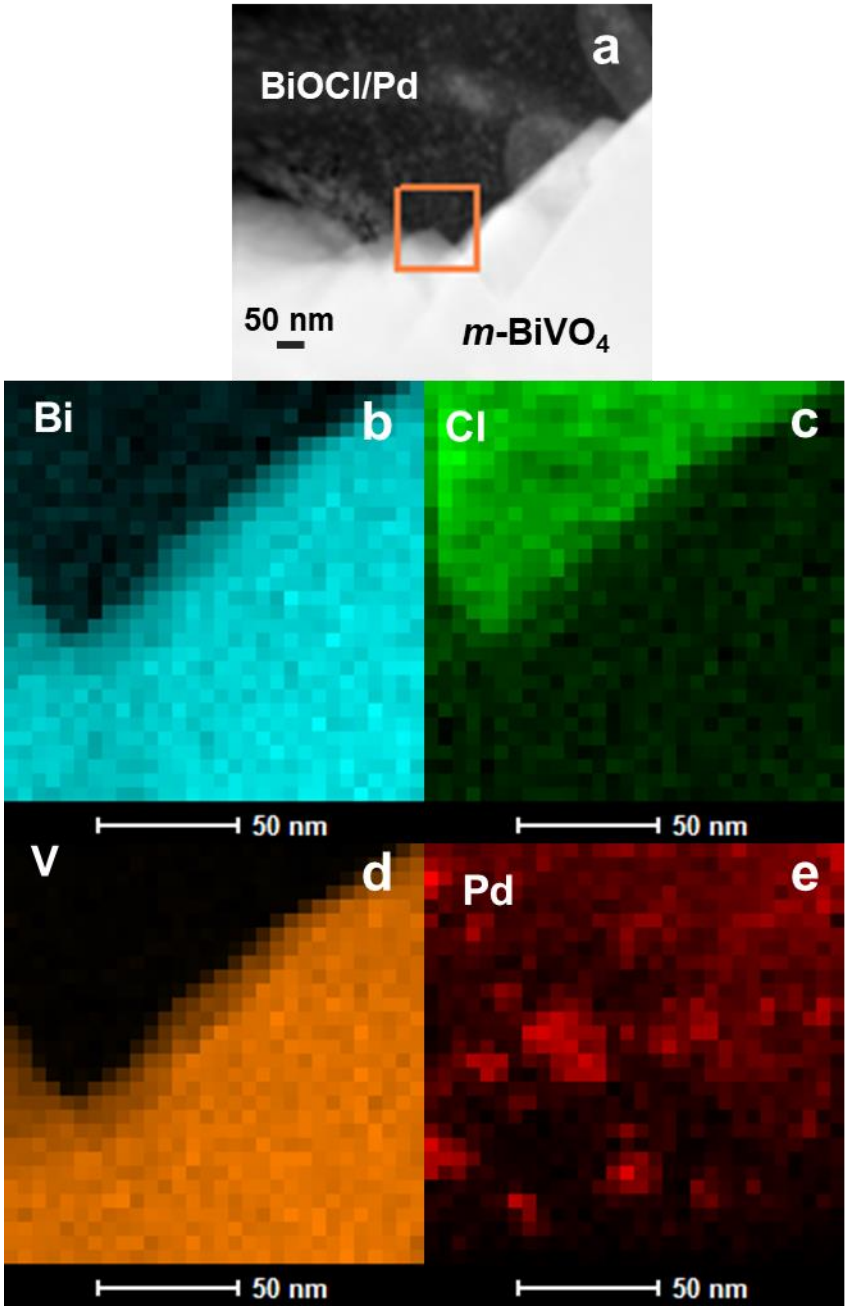

Figure S2. Dark-field STEM image and EDS elemental mapping of $BiVO_4$/BiOCl/Pd

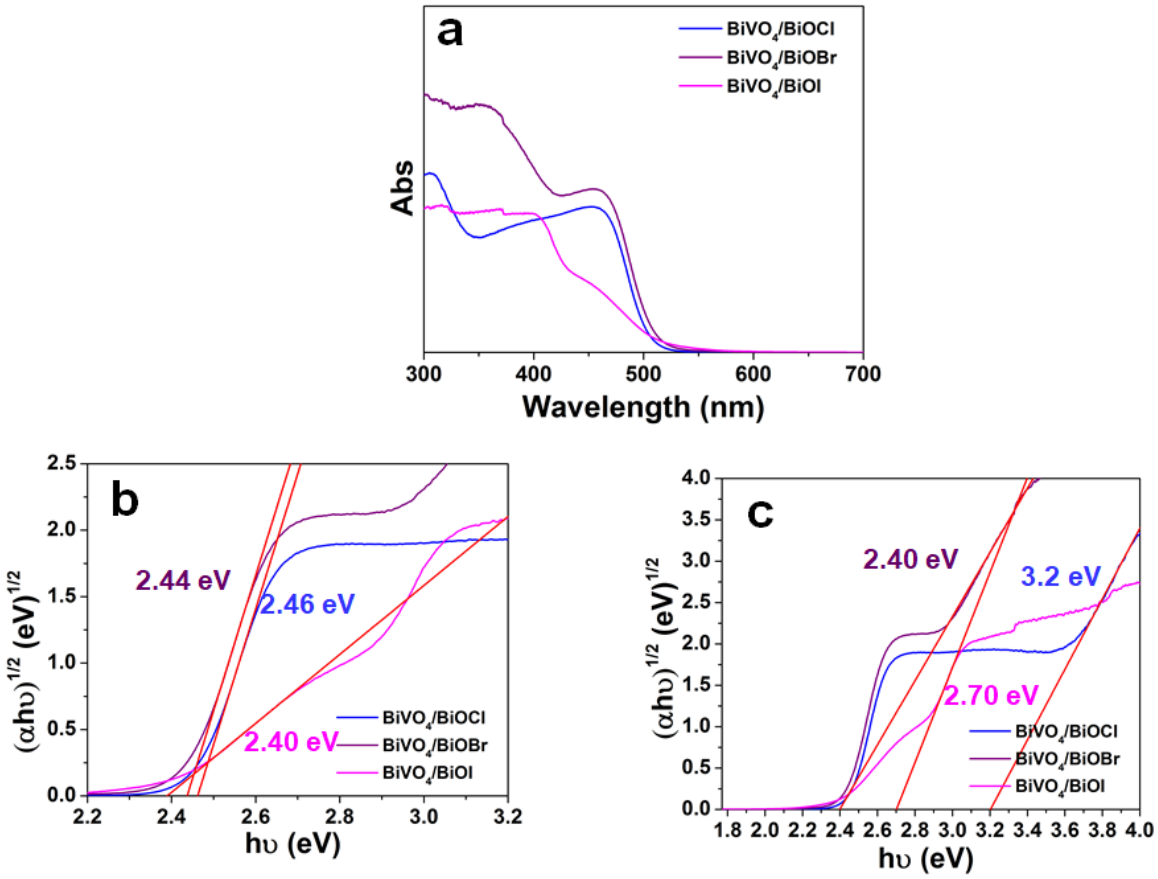

Figure S3. UV-vis DRS spectra of the $BiVO_4$/BiOX materials (top) and Tauc plots (bottom) for the (b) $BiVO_4$ and (c) BiOX components.

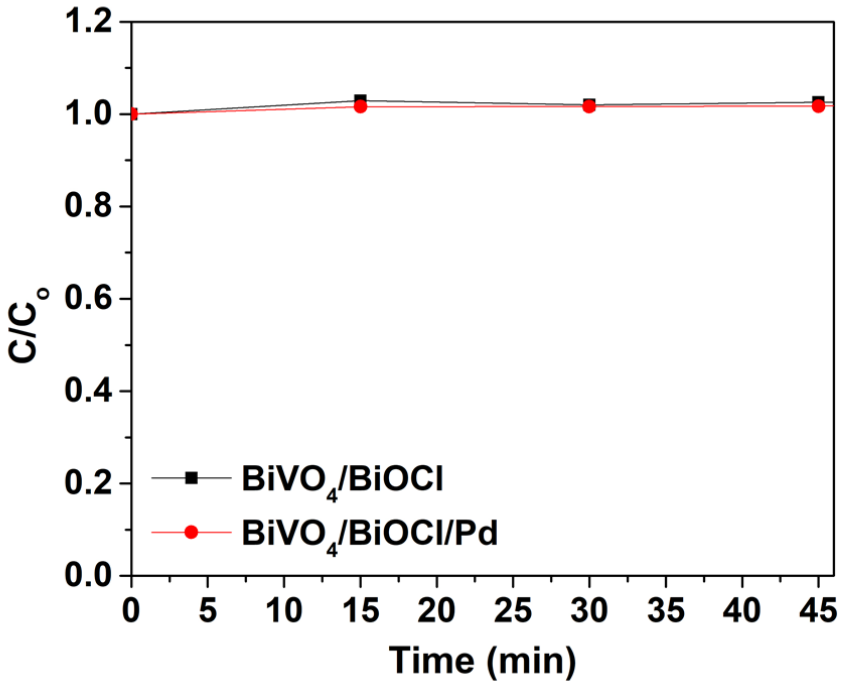

Figure S4. Measurements of RhB concentration changes in the dark prior to irradiation and reaction initiation using the $BiVO_4$/BiOCl and $BiVO_4$/BiOCl/Pd materials. No changes in concentration were evident after 45 min, indicating lack of adsorption of the dye on the materials.

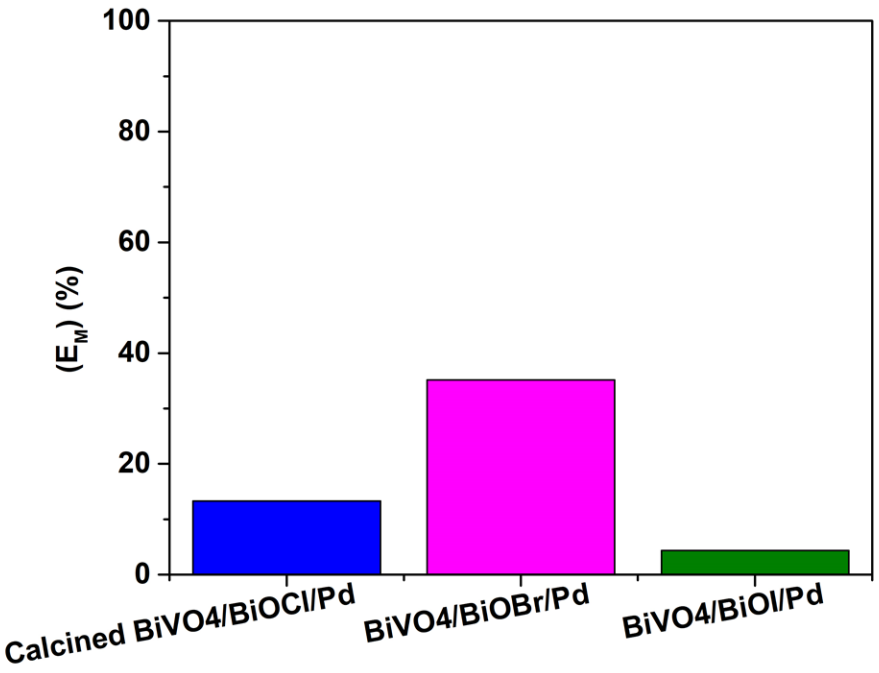

Figure S5. Total organic carbon mineralized using the indicated photocatalytic material where E_M represents the efficiency of RhB mineralization.

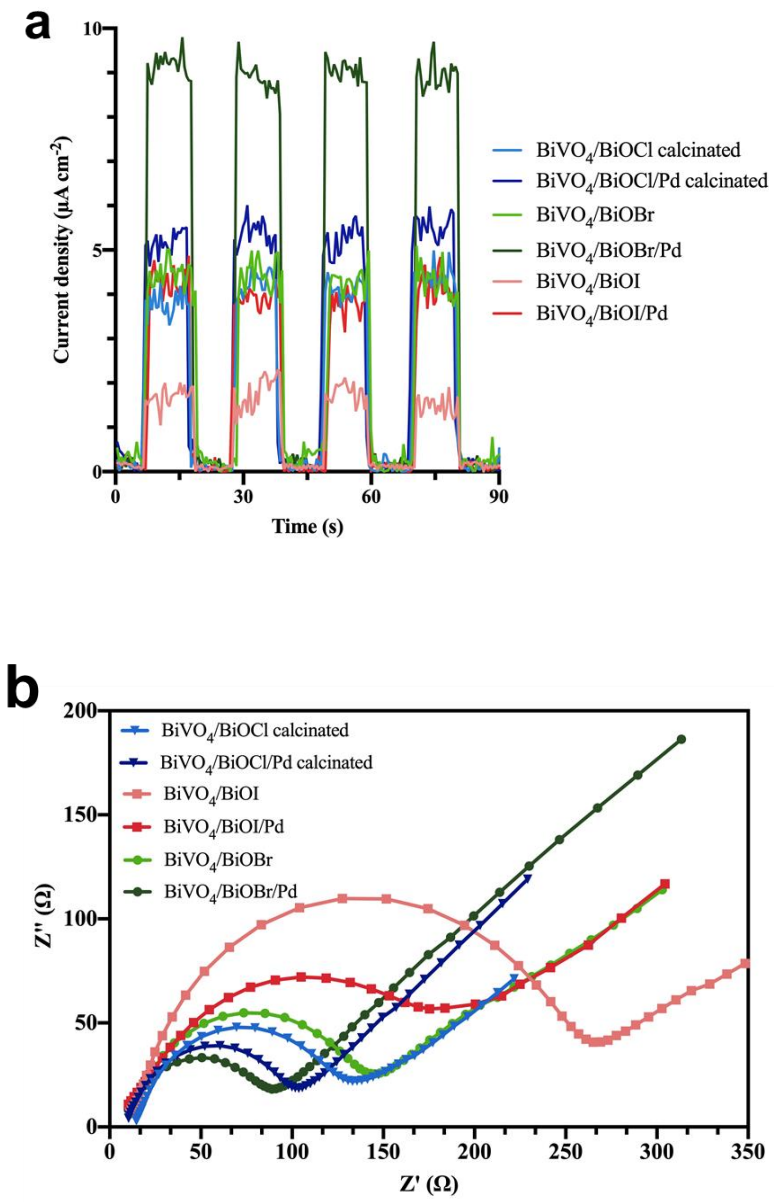

Figure S6. Part (a) presents the transient photocurrent spectra of the $BiVO_4$/BiOX/Pd materials, while part (b) displays the EIS spectra of the indicated materials.

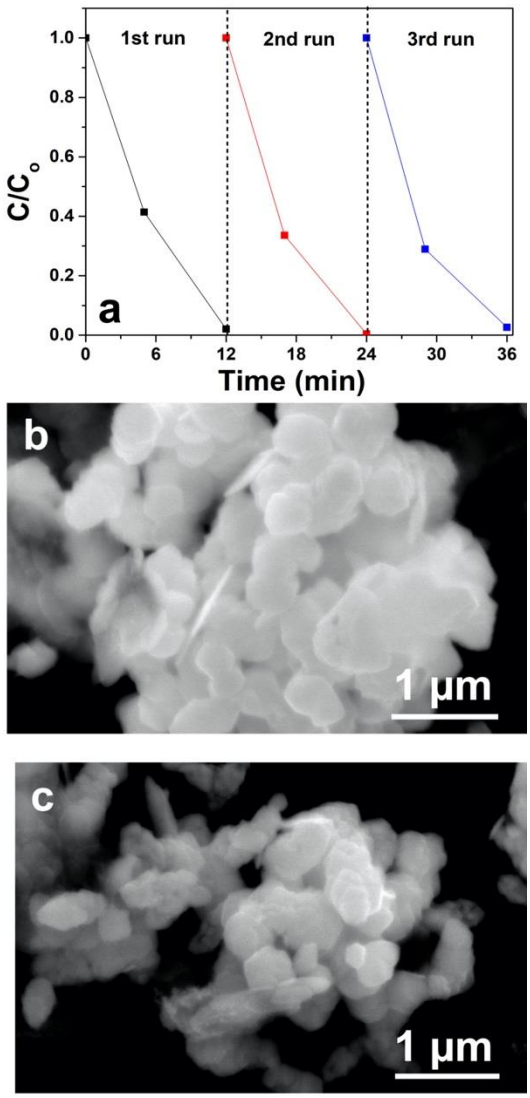

Figure S7. Catalytic recycling analysis for the degradation of RhB using the calcined $BiVO_4$/BiOCl/Pd photocatalyst. Part (a) presents the reactivity analysis over three catalytic cycles, while parts (b and c) display an SEM image of the materials (b) before and (c) after one catalytic cycle.