**Electronic supplementary information for**

**Biomolecule-assisted route to obtain nanostructured bismuth oxybromide with enhanced photocatalytic activity**

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| C:\Users\BCT\Documents\Orientações\Genesis\Imagens\Gly\BBrGL__009.tif**(a)** | C:\Users\BCT\Documents\Orientações\Genesis\Imagens\Gly\BBrGL__011.tif**190 nm****(b)** |
| C:\Users\BCT\Documents\Orientações\Genesis\Imagens\Gly\BBrGL__008.tif**5.8 μm****5.3 μm****(c)** | C:\Users\BCT\Documents\Orientações\Genesis\Imagens\Phe\BBrRhe__010.tif**(d)** |

Fig. S1 FEG-SEM images of the as-prepared samples. *a, b, c)* BOB-gly. *c)* BOB-phe.

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| C:\Users\Marcio Almeida\Documents\Papers_2019\Genesis\BET\Fig. S3.jpg |

Fig. S3 Nitrogen adsorption–desorption isotherms of the BiOBr compounds.

Table S1.Refined structural data for the BiOBr samples, based on tetragonal symmetry.

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| Space group: *P4/nmm* (#129); Z=2 |
| BOB |
| Cell parameters: a=3.91716(15) Å; c=8.08797(33) Å; cell volume 124.10(1) Å3 |
| Fractional coordinates |
| Label | Wyckoff site | x | y | z | Occ. | Uiso |
| Bi1 | 8j | 0.25 | 0.25 | 0.15389(16) | 1 | 0.02876(35) |
| Br1 | 8j | 0.25 | 0.75 | 0.65743(40) | 1 | 0.03449(101) |
| O1 | 4d | 0.25 | 0.75 | 0 | 1 | 0.025 |
| Bismuth bond angles |
| Atom 1 | Atom 2 | Distance 1,2 (Å) | Atom 3 | Distance 1,3 (Å) | Bond angle (°) |  |
| Bi | Br | 3.1698(17) | O | 2.3251(8) | 74.786(41) |  |
|  | Br | 3.1698(17) | Br | 3.1698(17) | 76.465(51) |  |
|  | O | 2.3251(8) | O | 2.3251(8) | 73.251(25) |  |
| Bonds |
| Atom 1 | Atom 2 |  | Bond distance (Å) |  |  |  |
| Bi | Br | 4x | 3.1698(17) |  |  |  |
|  | O1 | 4x | 2.3251(8) |  |  |  |
| BOB-phe |
| Cell parameters: a=3.91937(48) Å; c=8.09242(116) Å; cell volume 124.31(3) Å3 |
| Fractional coordinates |
| Label | Wyckoff site | x | y | z | Occ. | Uiso |
| Bi1 | 8j | 0.25 | 0.25 | 0.15218(18) | 1 | 0.03946(54) |
| Br1 | 8j | 0.25 | 0.75 | 0.65919(43) | 1 | 0.04905(167) |
| O1 | 4d | 0.25 | 0.75 | 0 | 1 | 0.025 |
| Bismuth bond angles |
| Atom 1 | Atom 2 | Distance 1,2 (Å) | Atom 3 | Distance 1,3 (Å) | Bond angle (°) |  |
| Bi | Br | 3.1676(17) | O | 2.3173(8) | 74.492(41) |  |
|  | Br | 3.1676(17) | Br | 3.1676(17) | 76.531(51) |  |
|  | O | 2.3173(8) | O | 2.3225 (9) | 73.539(25) |  |
| Bonds |
| Atom 1 | Atom 2 |  | Bond distance (Å) |  |  |  |
| Bi | Br | 4x | 3.1676(17) |  |  |  |
|  | O1 | 4x | 2.3173(8) |  |  |  |

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| **Space Group: P4/nmm (#129); Z=2** |
| **BOB-gly** |
| Cell parameters: a=3.91936(15) Å, c=8.09196(32) Å; Cell volume 124.30(1) Å3 |
| Fractional Coordinates |
| Label | Wyckoff Site | x | y | z | Occ. | Uiso |
| Bi1 | 8j | 0.25 | 0.25 | 0.15340(15) | 1 | 0.02908(30) |
| Br1 | 8j | 0.25 | 0.75 | 0.65951(38) | 1 | 0.03492(87) |
| O1 | 4d | 0.25 | 0.75 | 0 | 1 | 0.025 |
| Bismuth Bond Angles |
| Atom 1 | Atom 2 | Distance 1.2 (Å) | Atom 3 | Distance 1.3 (Å) | Bond Angle (°) |  |
| Bi | Br | 3.1680(17) | O | 2.3248(7) | 74.723(39) |  |
|  | Br | 3.1680(17) | Br | 3.1680(17) | 76.522(51) |  |
|  | O | 2.3248(7) | O | 2.3248(7) | 73.265(22) |  |
| Bonds |
| Atom 1 | Atom 2 |  | Bond Distance (Å) |  |  |  |
| Bi | Br | 4x | 3.1680(17) |  |  |  |
|  | O1 | 4x | 2.3248(7) |  |  |  |

Table S2.Refined structural data for samples BOB-gly in the basis of the tetragonal symmetry

Table S3.Parameters of nitrogen adsorption–desorption isotherms of the BiOBr compounds

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| --- | --- | --- | --- |
| **Parameter** | **BOB** | **BOB-gly** | **BOB-phe** |
| Correlation Coefficient | 0.9999078 | 0.9995173 | 0.9998873 |
| Specific area, SBET (m2/g) | 2.0217 | 7.6950 | 6.3410 |
| Total pore volume, VBJH (cm3/g) | 0.006697 | 0.038963 | 0.026159 |
| Pore diameter, Dp (Å)\* | 129.435 | 161.975 | 147.092 |

\* BJH Desorption average pore diameter.