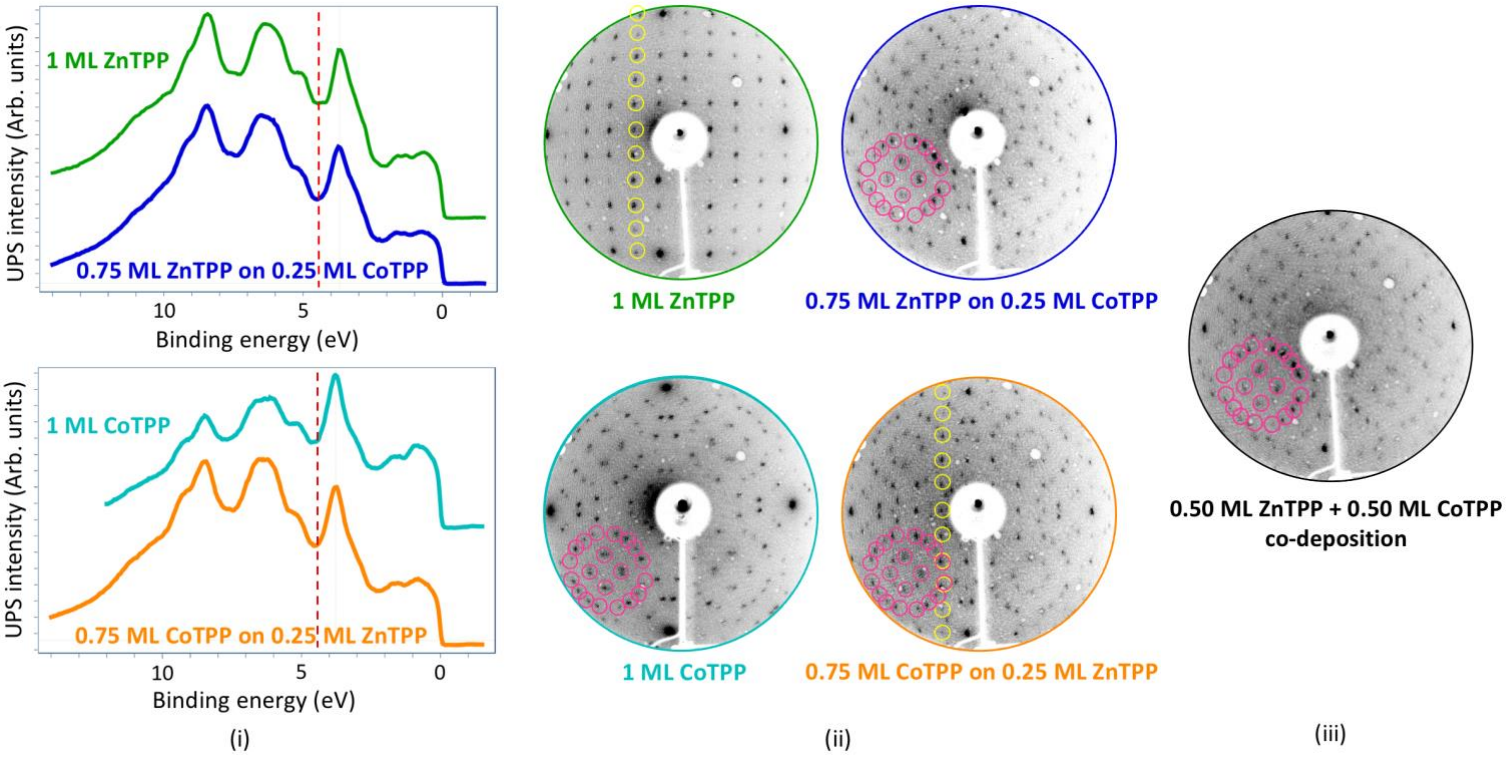

Figure 1. (i) UPS spectra of the valence band region, **(ii)** LEED patterns of mixed M_1TPP+M_2TPP organic monolayers sequential deposition on Fe(001)-*p*(1 × 1)O substrate, **(iii)** LEED pattern of mixed M_1TPP+M_2TPP organic monolayer co-deposition on Fe(001)-*p*(1 × 1)O substrate.

In **(i)**, the red dotted lines indicate the O 2p peak position which is a contribution from the underlying Fe(001)-*p*(1 × 1)O substrate. Here, the absence of sharp peaks in such positions indicate complete monolayer coverages. In **(ii)**, top row: 0.25 ML CoTPP is deposited first (M_1TPP), followed by 0.75 ML ZnTPP (M_2TPP); bottom row: 0.25 ML ZnTPP is deposited first (M_1TPP), followed by 0.75 ML CoTPP (M_2TPP). Results from 1ML pure ZnTPP on Fe(001)-*p*(1 x 1)O (top row) and 1 ML pure CoTPP on Fe(001)-*p*(1 × 1)O (bottom row) are presented for comparison. In **(ii)** and **(iii)**, patterns highlighted by yellow circles exhibit (5 × 5) ordering and patterns highlighted by pink circles exhibit (5 × 5)R37° ordering.

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