



Extended Data Figure 7 | Optical properties of MoS₂-WS₂ lateral heterostructures. a–c, Composite photoluminescence intensity mapping of single-junction (a), two-junction (b) and three-junction (c) MoS₂-WS₂ monolayer lateral heterostructures corresponding to the optical images in Extended Data Fig. 6a–c, respectively, at 1.84 eV (MoS₂ domain) and 1.97 eV (WS₂ domain). d, Raman intensity mapping at frequency 351 cm⁻¹

(d, WS₂ domain), 405 cm⁻¹ (e, MoS₂ domain). f, Photoluminescence position mapping corresponding to the optical image in Fig. 2a. g, SEM image of a three-junction MoS₂-WS₂ monolayer lateral heterostructure island. The high magnification image of the boxed region, shown in the right panel, shows the lateral connectivity between respective domains of MoS₂ or WS₂. Scale bars: a–g, 10 μm.