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Optical spectroscopy of two-dimensional polymer networks HALLEH BALCH, CHRISTIAN DIERCKS, PETER WALLER, LEI GUO, UC Berkeley, MICHIO MATSUMOTO, Northwestern University, RAGHUNATH DASARI, SETH MARDER, Georgia Tech, OMAR YAGHI, UC Berkeley, WILL DICHTEL, Northwestern University, FENG WANG, UC Berkeley — Two-dimensional covalent organic frameworks are periodic materials comprised of molecular monomers bound covalently in plane and pi-bonded out of plane. By leveraging the versatility of imine condensation reactions, we are able to employ a library of conjugated small molecules including porphyrins, fluorenes, pyrenes, and triphenylenes to develop extended structures. We study their optoelectronic properties via absorption, photoluminescence, and vibrational spectroscopy to understand how physical properties can be designed at the molecular- and emergent at the macroscopic-scale.

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