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Symmorphic linked nodal rings in semiconducting layers YUAN-PING CHEN, YUEE XIE, Xiangtan University, Hunan, China, HEUNG-SIK KIM, DAVID VANDERBILT, Rutgers University, NJ — The unique properties of topological semimetals have strongly driven efforts to seek for new topological phases and related materials. Here, we identify a critical condition for the existence of linked nodal rings (LNRs) in symmorphic crystals, and propose that three types of LNRs, can be obtained by stacking semiconducting layers. Several honeycomb structures are suggested to be topological LNR semimetals, including layered and hidden layered structures. Transitions between the three types of LNRs can be driven by external strains. Interesting surface states other than drumhead states are found in these topological materials. A tight-binding (TB) model and a k^*p model are used to explain the relations between the topological phases and how they evolve into one another.

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