

Abstract Submitted  
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**The effects of strain on structural and electronic properties of graphane** MEHMET TOPSAKAL, SEYMUR CAHANGIROV, SALIM CIRACI, UNAM - Institute of Materials Science and Nanotechnology — Based on first-principles calculations, we reveal the elastic properties of recently synthesized monolayer hydrocarbon, graphane. The in-plane stiffness and Poisson's ratio values are found to be smaller than those of graphene, and its yielding strain decreases in the presence of various vacancy defects and also at high ambient temperature. We also found that the band gap can be strongly modified by applied strain in the elastic range. We also showed that beyond the yielding point, the nonmagnetic graphane honeycomb structure changes into magnetic atomic chains and small flakes made by various polygons.

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