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Understanding the properties of hexagonal Semiconducting Nanomembranes RODRIGO AMORIM, XIAOLIANG ZHONG, SAIKAT MUKHOPADHYAY, RAVINDRA PANDEY, Michigan Tech, SHASHI KARNA, Army Research Laboratory — Namomembranes are an interesting material with novel applications, such as their integration into electronic devices. We can highlight the high degree of bendability of nanomembranes that can be important to device integration and the possibility of modifying electronic properties by changing the roughness. Using density functional theory (DFT) combined with non-equilibrium green's function (NEGF) theory, we investigate different hexagonal semiconducting nanomembranes (e.g. BN, AlN and GaN). We will show the stability, electronic and transport properties of these nitride membranes and look into their possible integration with graphene.

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