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Confined state energies in AGNR semiconductor-semiconductor heterostructure

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## Highlights

- A graphene structure called semiconductor-semiconductor heterostructure (SSH) is proposed, which is combined with  $3m$  and  $3m+1$  families AGNRs.
- Simulation results reveal that energy gap of SSH structure is continuously and analytically tunable with the increase of  $N1/N$ .
- SSH's tunable energy gap can be attributed to the quantum well localization effect which is induced by the combination of SSH's two different families AGNRs.

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