

2D materials for remote epitaxy and heterogeneous integration

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Heterogeneous integration of functional materials offers exciting new opportunities for advanced device platforms and functional systems. In this talk, I will introduce the integration of compound semiconductors with 2D materials as a pathway for novel microelectronic and optoelectronic device platforms. I will first introduce two epitaxy techniques on 2D materials – remote epitaxy and nanopatterned 2D materials-based epitaxy. 2D materials formation methods on non-conventional substrates will be introduced, and techniques to grow thin films on 2D materials will be discussed [1,2]. Lastly, I will discuss layer transfer of thin films grown by these techniques for heterogeneous integration, and introduce optoelectronic device applications enabled such approaches [3].

References

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- [3] Jiho Shin, Hyunseok Kim, Suresh Sundaram, Junseok Jeong, et al., and Jeehwan Kim, "Vertical full-colour micro-LEDs via 2D materials-based layer transfer", *Nature*, 614(7946), (2023), 81-87