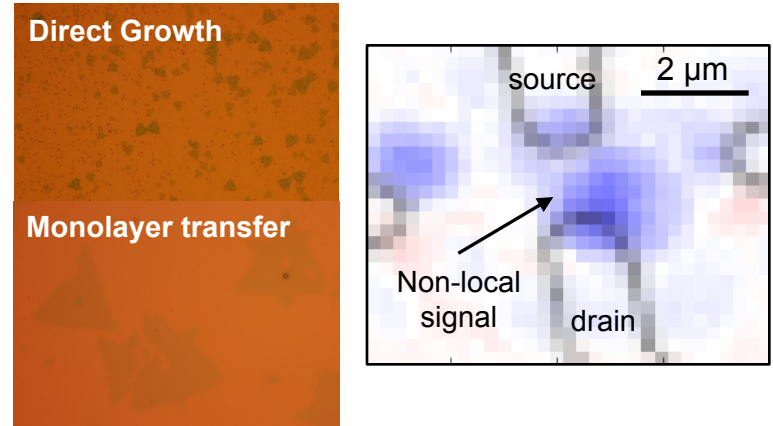


Monolayer Assembly for Valley-Selective Opto-Electronics

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Monolayer two-dimensional semiconductors present a promising opportunity for exploiting emergent symmetry-selective valley phenomena for opto-electronic devices. This MRSEC Seed has developed polycarbonate dry transfer methods to overcome the poor optical quality of large-area monolayers obtained by vapor deposition for integrating pristine high-quality exfoliated monolayers into opto-electronics. Utilizing precise layer transfer to assemble composite materials, hybrid opto-electronic devices exhibiting new light-matter states and non-trivial Hall effects have been achieved.



Optical microscopy images showing improved monolayer yield on substrates after transfer (left), enabling new material phenomena such as non-local imaging of the valley Hall effect (right).