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Chemical vapor deposition of atomically thin materials for membrane dialysis applications PIRAN KIDAMBI, ALEXANDER MOK, DOO-JOON JANG, MICHAEL BOUTILIER, LUDA WANG, ROHIT KARNIK[1], Massachusetts Institute of Technology, MICROFLUIDICS & NANOFLUIDICS RESEARCH LAB TEAM — Atomically thin 2D materials like graphene and h-BN represent a new class of membranes materials. They offer the possibility of minimum theoretical membrane transport resistance along with the opportunity to tune pore sizes at the nanometer scale. Chemical vapor deposition has emerged as the preferable route towards scalable, cost effective synthesis of 2D materials. Here we show selective molecular transport through sub-nanometer diameter pores in graphene grown via chemical vapor deposition processes. A combination of pressure driven and diffusive transport measurements shows evidence for size selective transport behavior which can be used for separation by dialysis for applications such as desalting of biomolecular or chemical solutions. 1. O'Hern et al. Nano Letters (2015). 2. Boutilier et al. ACS Nano (2014). 3. O'Hern et al. Nano Letters (2013). 4. O'Hern et al. ACS Nano (2012). 5. Kidambi et al. Chemistry of Materials (2014). 6. Kidambi et al. Nano Letters (2013).

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