

第270回GMSI公開セミナー／第93回CIAiSセミナー／第15回iFSセミナー

Electronic, Thermal, and Unconventional Applications of 2D Materials

Professor Eric Pop

Electrical Engineering and Materials Science & Engineering
Stanford University

Date: Saturday, September 8th 2018, 14:00 – 15:30

Venue: Room 31A, 3F, Faculty of Engineering Bldg. 2

Abstract :

This invited talk will present recent highlights from our research on two-dimensional (2D) materials and devices including graphene, boron nitride (h-BN), and transition metal dichalcogenides (TMDs). The results span from fundamental measurements and simulations, to device- and several unusual system-oriented applications which take advantage of unique 2D material properties. We describe ~10 nm scale transistors and contacts with record-high-current drive ($>400 \mu\text{A}/\mu\text{m}$) and record-low contact resistance based on monolayer semiconducting MoS₂, grown by large-area chemical vapor deposition (CVD). We will also describe measurements and simulations of high-field transport and power dissipation in functioning 2D devices, as well as basic thermal and thermoelectric properties of 2D materials, including their anisotropy and the thermal resistance of their interfaces. Our studies reveal fundamental limits and some new applications that could be achieved with 2D nanomaterials, while taking advantage of unique 2D material properties.



主催： 東京大学大学院工学系研究科専攻間横断型教育プログラム 機械システム・イノベーション (GMSI)
最先端融合科学イノベーション教育研究コンソーシアム (CIAiS)
未来社会空間の創生 国際卓越大学院 (WINGS iFS)
本件連絡先： 東京大学大学院工学系研究科機械工学専攻 教授 丸山 茂夫
GMSI事務局 E-mail: office@gmsi.t.u-tokyo.ac.jp Phone: 03-5841-0696