

Facile Route for Patterned Growth of Graphene through One-Pot Synthesis

박범진, 박재성¹, 손진경², 김용진³, 유성욱, 박효주⁴,
채동훈¹, 변진석, 허 성², 이승기⁵, Artem Mishchenko³,
현 승, 박승규, 이태걸¹, 한상우², 이종훈⁴, 황찬용¹,
K. S. Novoselov³, 김광수⁴, 홍병희⁶, 김진곤[†]

포항공과대학교; ¹한국표준과학연구원; ²KAIST; ³University of Manchester; ⁴UNIST; ⁵연
세대학교;
⁶서울대학교
(jkkim@postech.ac.kr[†])

Graphene is expected to play a role as an essential building block of 2D integrated circuit due to the simple modification of its electrical properties by doping and patterning. However, in order for 2D integrated circuit to be well worked, it is necessary to find another building block as insulator and combine these two building blocks into one circuit. Recently, although the lateral hetero-structures with graphene and hexagonal boron nitride can be grown using two-step CVD method, it is complicated and not applicable to the system with more than two components. Here, we report that one step growth of graphene/amorphous carbon (G/AC) hetero-structures from solid source as polystyrene (PS) via UV irradiation. The chemical pattern of neat/cross-linked PS via UV irradiation on copper foil converted to the pattern of G/AC in CVD. Because the resistance of amorphous carbon is 100 times higher than that of graphene, amorphous carbon is worked as insulator.