

Fabrication of Three Dimensional Graphene on Interconnected Nickel Nanowires

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Three-dimensional (3D) interconnected graphene has been attracting interests in broad range of applications such as energy storage and catalyst system due to its high specific surface area and more adsorption sites with high conductivity. Among the various methods to prepare the 3D graphene structures, integration of chemically derived graphene remains several limitations like poor electrical properties from high inter-sheet junction resistance and difficulty in control of pore size. Also, 3D graphene grown on porous nickel foam by chemical vapor deposition (CVD) have too large pore size of few hundred of micrometers. Herein, facile method is suggested to fabricate 3D graphene structure on interconnected nickel nanowires using CVD. Synthesized nickel nanowires were integrated to nickel foam with pore size from few tens to few hundred of nanometers by vacuum filtration. Finally, highly conductive 3D interconnected graphene was successively prepared on the as-prepared nickel foam by CVD.