March 13, 2013

Curriculum Vitae

Byung Hee Hong received the BS (1998), MS (2000) and PhD (2002) degrees in chemistry from POSTECH. After spending 3.5 years as a postdoctoral candidate at the Columbia University (Advisor: Philip Kim), he joined the Department of Chemistry, Sungkyunkwan University as an assistant professor, in 2007. Now, he is an associate professor in the Department of Chemistry at the SNU. Prof. Hong was invited by the Nobel Committee to give a presentation in the Novel Symposium on Graphene, five months prior to the announcement of the Nobel Physics Prize on graphene in 2010. The press release by the Royal Swedish Academy has cited Prof. Hong's paper as one of the major research achievements that contributed to the prize. He received the POSCO TJ Park Science Fellowship (2009), the SKKU Young Fellowship (2010), the Yumin Award of Science (2010), the Kyung-Ahm Prize of Natural Sciences (2011), and the Excellent Researcher Award in Materials Chemistry (Korean Chemical Society, 2012). Prof. Hong's researches have been highlighted by the BBC, New York Times, C&EN News (Cover Story), Physics Today, Nature (Cover story), Science, Scientific American, Discover, CNBC, etc.

Prof. Hong pioneered the large-scale synthesis of graphene by CVD, which triggered chemical research studies toward the practical applications of graphene. His first report on the CVD synthesis of graphene (*Nature* **457**, 706 (2009)) has recorded *the world* ***highest citations in chemistry*** among the papers published since 2009 (~2000 times in Google Scholar). A year after, Prof. Hong developed the synthesis of ultra-large graphene based on roll-to-roll methods and applied the material to flexible touch screens (*Nature Nanotech.* **5**, 574-578 (2010)), which is believed to be the first demonstration of the utilization of graphene materials in practical electronic devices. This paper also recorded *the* ***6th highest citation in materials science*** among the papers published since 2010 worldwide (~900 times). In addition, he reported the synthesis of world's thinnest silver nanowires (*Science* **294**, 348 (2011); cover article) and the synthesis of the self-assembled nanolenses overcoming the diffraction limit of light (*Nature* **457**, 706 (2009)).

Prof. Hong's vision is to develop futuristic 2-dimensional nanomaterials with enhanced physical, chemical, electrical, and mechanical properties, which can be applied to overcome the current limits of industrial technologies in terms of mechanical strength and flexibility, chemical stability, reactivity, electronic and thermal conductivity, and processability. By chemical and physical control of the graphene structures, the basic characteristics of 2D nanomaterials such as semiconducting or metallic properties can be engineered. In addition, Prof. Hong will also investigate new properties of graphene to be utilized for various biological/analytical applications including stem-cell growth on graphene scaffolds and graphene-based advanced Raman and TEM imaging.

Selected Publications

1. "Extremely efficient flexible organic light-emitting diodes with modified graphene anode," *Nature Photonics* **2012** *, 6*, 105.
2. "High-performance graphene-based transparent flexible heaters," *Nano Lett*. **2011**, *11*, 5154.
3. "Roll-to-roll production of 30 inch graphene films for transparent electrodes," *Nature Nanotech*. **2010**, *5*, 574. (Cover Article)
4. "Large-Scale pattern growth of graphene films for stretchable transparent electrodes," *Nature* **2009***, 457*, 706.
5. "Near-field focusing and magnification through self-assembled nanoscale spherical lenses*," Nature* **2009**, *460*, 498.
6. "Covalently bridging gaps in single-walled carbon nanotubes with conducting molecules," *Science* **2006**, *311*, 356.
7. "Ultrathin single-crystalline silver nanowire arrays formed in an ambient solution phase," *Science* **2001***, 294*, 348.