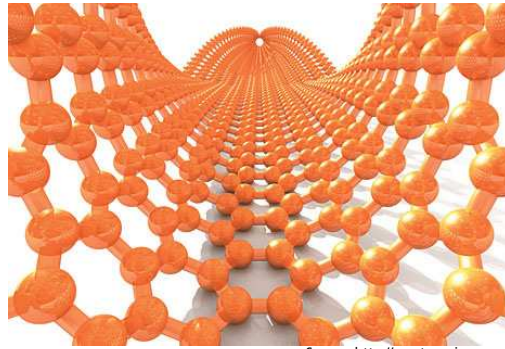


# Graphene Products and Production

**Urszula Kosidlo, M.Sc.**  
**Fraunhofer IPA**

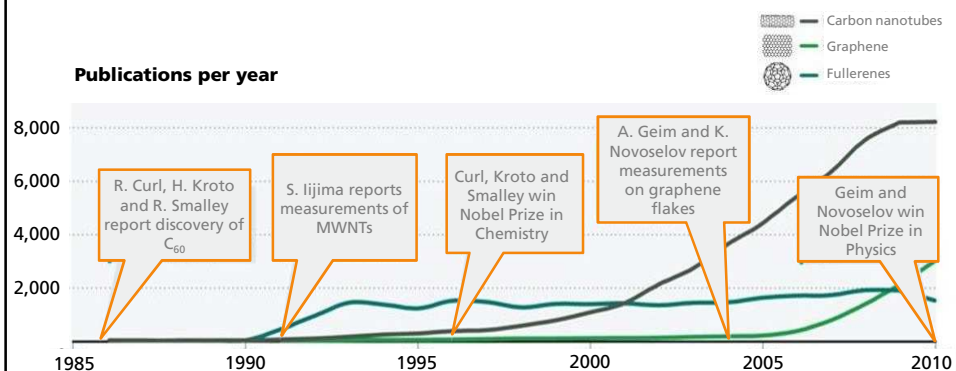


Source: <http://spectrum.ieee.org/>

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## Graphene Activities – Publications

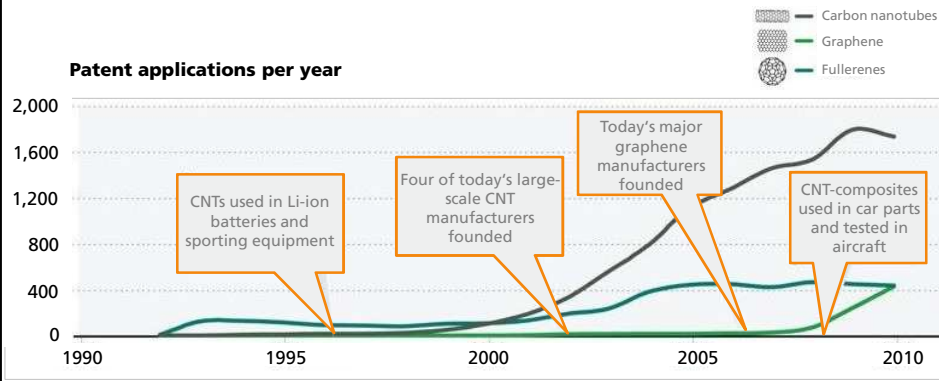


Source: *Nature* **469**, 14-16 (2011)

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## Graphene Activities – Patents



Source: *Nature* 469, 14-16 (2011)

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## Graphene Activities - Products

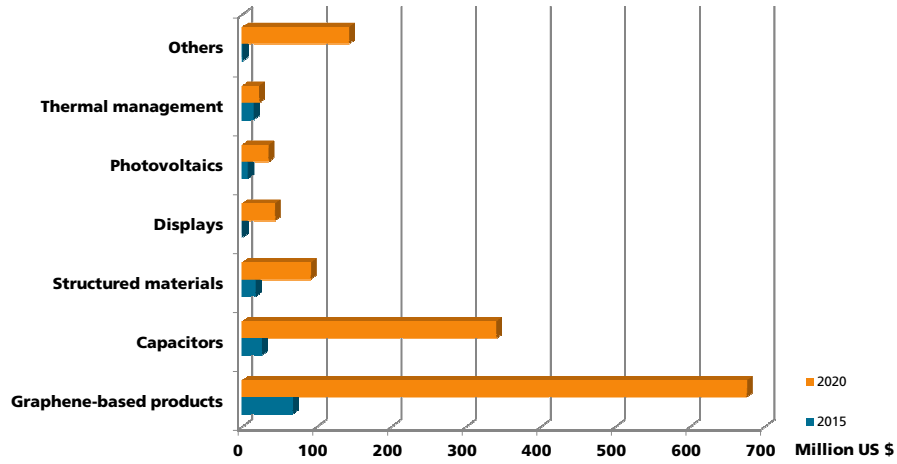


Source: <http://www.123rf.com/>

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## Global Graphene-Based Products Market



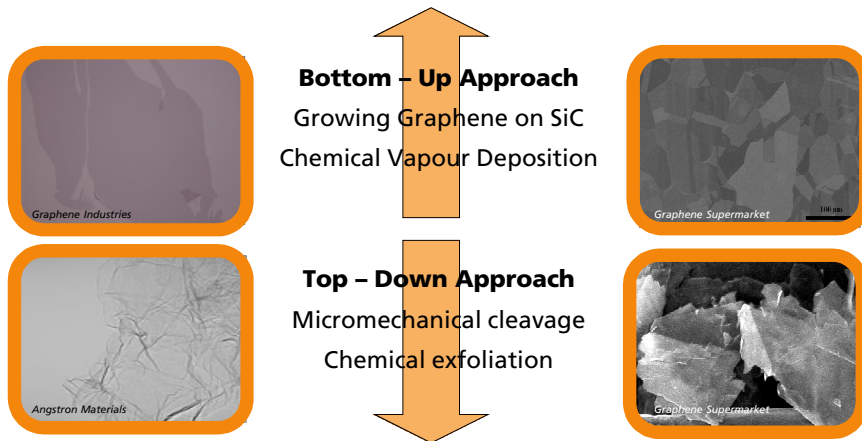
Source: <http://affiliatemarketingpro.org/>

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How to mass-produce graphene?

## Graphene Production Methods

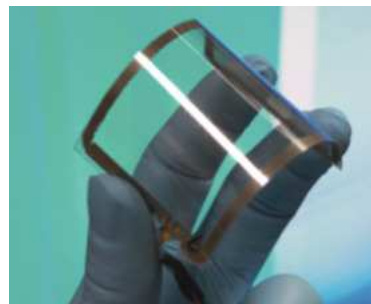


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## Large-Area and High-Quality

- Graphene sheets and coatings
- Producers are generally small, start-up companies
- Most near-term demand is for touch-screens and displays
- Application in the electronics and entertainment markets.



Source: Nature Nanotechnology Vol. 5, pp. 574–578 (2010)

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## CVD GRAPHENE



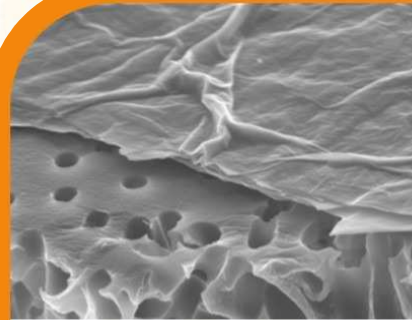
### High-Volume and Product-Diversity

- Graphene nanoplatelets and graphene oxide
- Producers are generally small, start-up companies
- Most near-term demand is for composites and electrodes
- application in the automotive, plastics, metals, aerospace and energy markets.

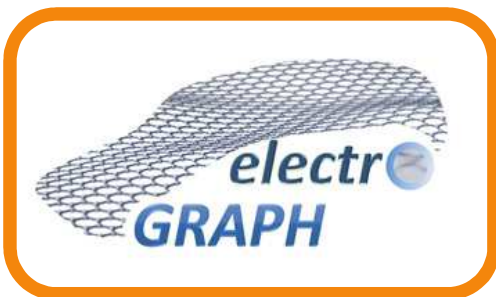
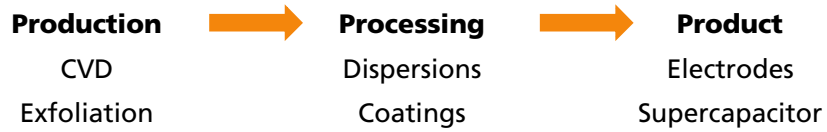


Source: *Nature Nanotechnology* 4, 612 - 614 (2009)

# ELECTROLYTIC GRAPHENE



## Integrated Approach

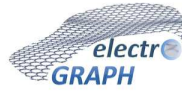


**Graphene - Based Electrodes for Application in Supercapacitors**  
(Grant Agreement No. 266391)

[www.electrograph.eu](http://www.electrograph.eu)



# ElectroGraph



Grant Agreement No: 266391



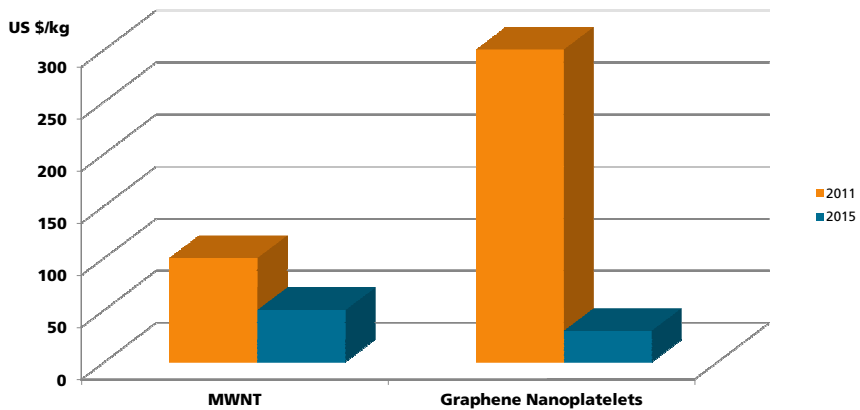
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## Average Selling Price

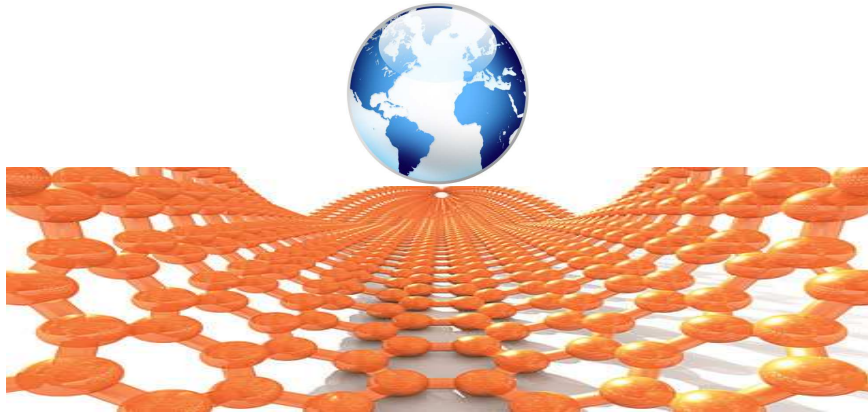


Source: Lux Research

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Thank you for your attention



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