SKGF Nanotube Patent Study - 2004

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Strategists and Advisors
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SKGF 2004 Nanotube Study Parameters

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- Reviewed 206 United States patents issued in 2004 with “nanotube” in the claims.
- Does not include alternative nomenclatures for nanotubes (e.g., nanocylinder, carbon fibers).
- Reviewed patent prosecution histories.

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SKGF Nanotube Study Purpose

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- Assess the quality of USPTO examination. Confirm or reject industry assumptions.
- Determine prosecution tips to assist clients secure better nanotube patents faster.
- Enhance view of Nanotube patent landscape. (Ongoing)

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Presentation Overview

- Diversity
- Pendancy
- Examination Rigor
- Landscape

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Nanotube Patent Growth

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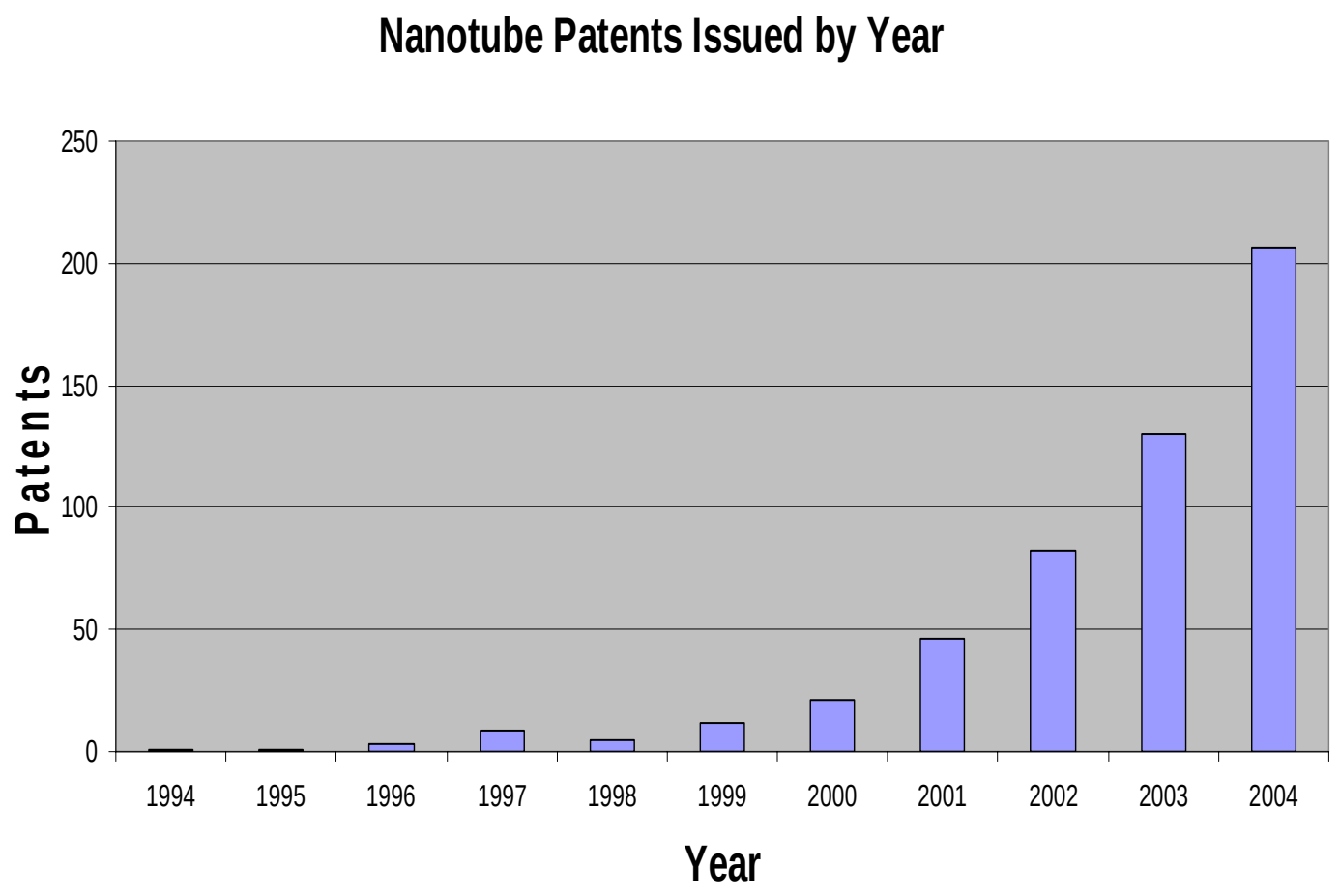

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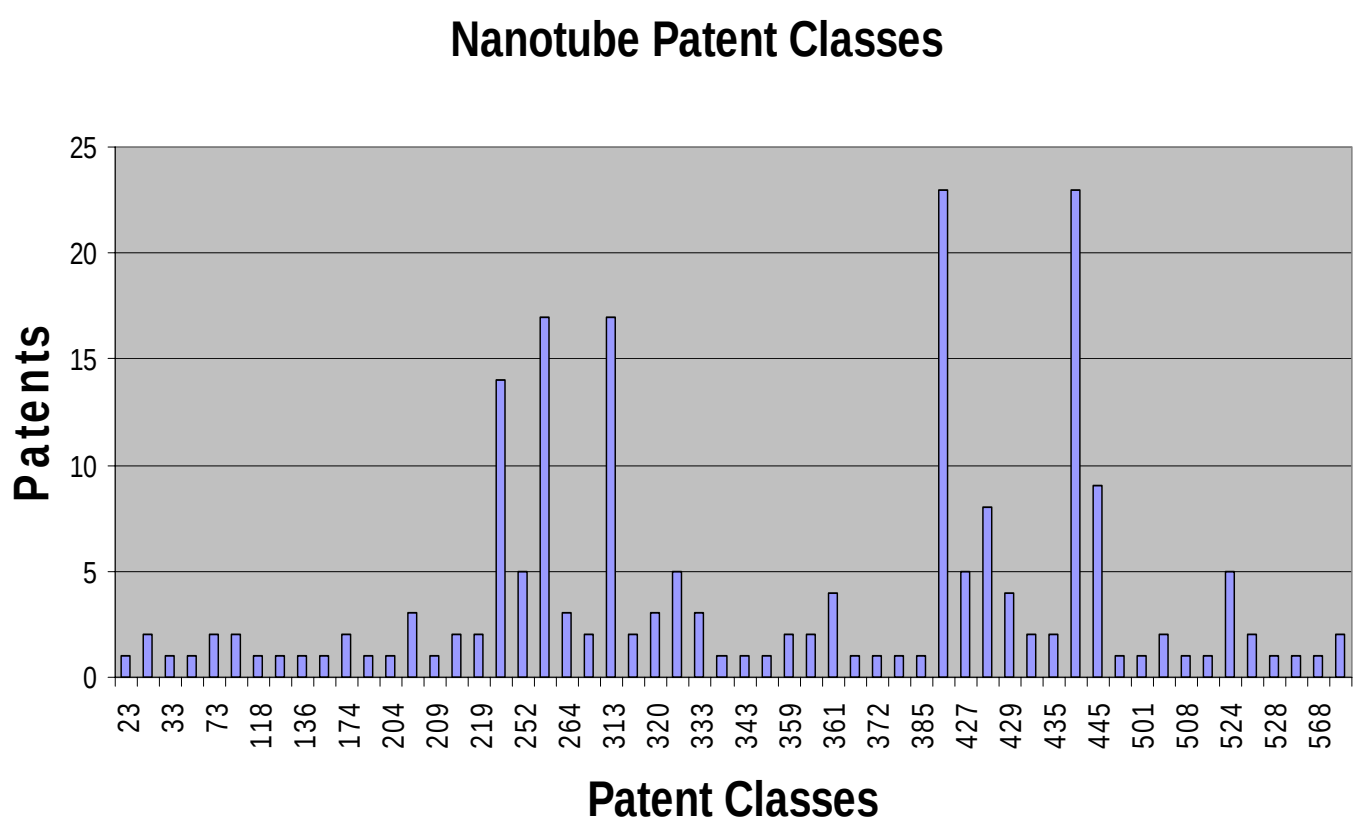

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’04 Nanotube Patent Diversity

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- 56 different patent classes
- Most common patent classes
  - 250 – Radiant Energy (14)
  - 257 – Active Solid State Devices (17)
  - 313 – Electric Lamp & Discharge Devices (17)
  - 423 – Chemistry of Inorganic Compounds (23)
  - 438 – Semiconductor Device Manufacturing (23)
- 103 different art units
- 142 different examiners (109 examiners examined only one nanotube patent application)

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’04 Nanotube Patent Diversity – What the Data Suggests

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- Unlikely that USPTO will create an examining group dedicated to nanotechnology.
- Nanotube patent thicket issue is overblown.
- Does limited examiner experience reduce examination quality? More on this later.
- Don’t assume that examiners know subject matter.
- File extensive non-patent literature.
- Aggressively interview cases.

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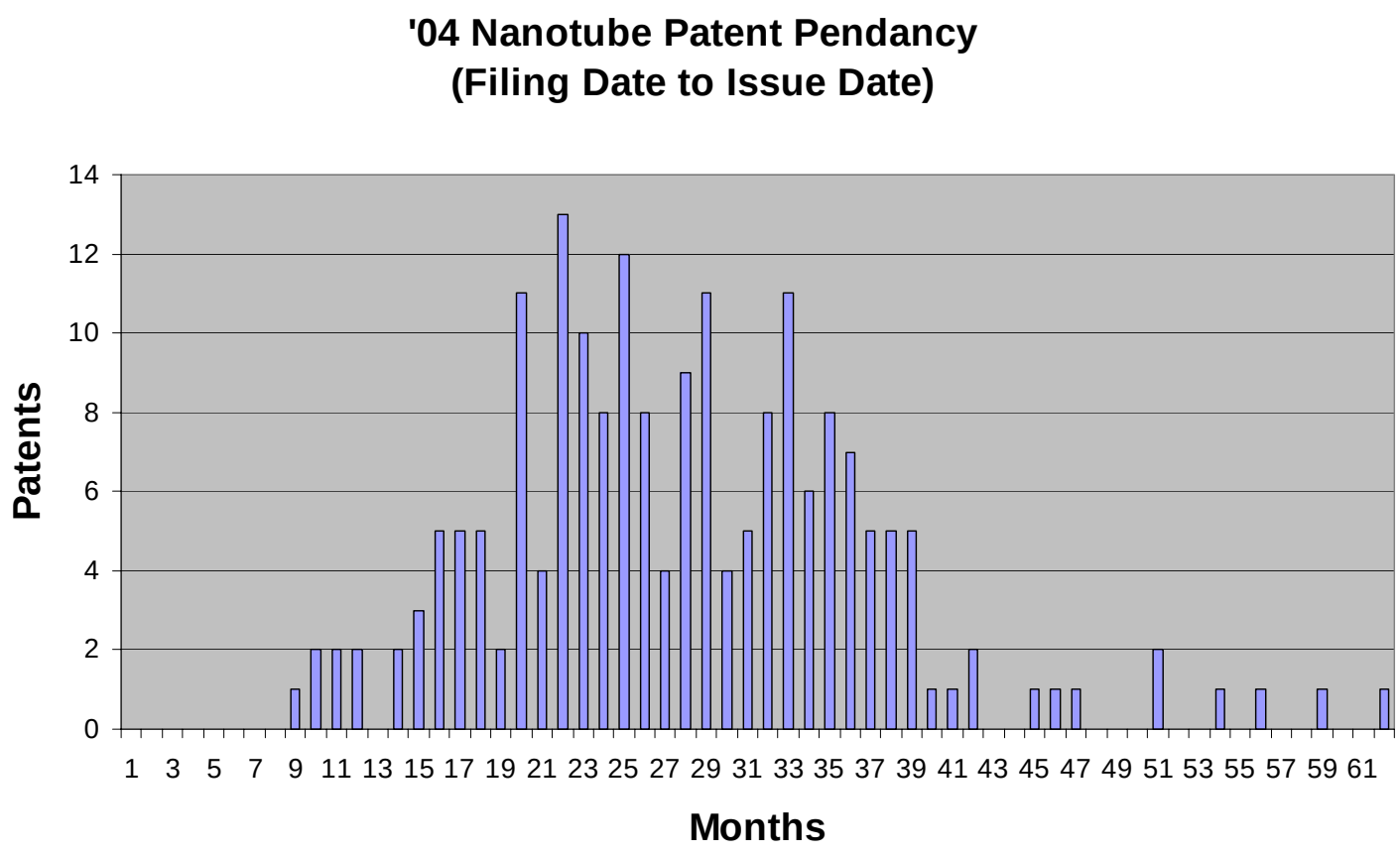

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Type	Count	Claim Average	Pendancy (File – Issue) Average
Overall	206	22.7	28.1
First Filed	164	23.5	28.9
Cont.	11	21.4	25.8
CIP	11	21.5	27.4
Divisional	18	16.2	36.6
PCT	1	33	46.1

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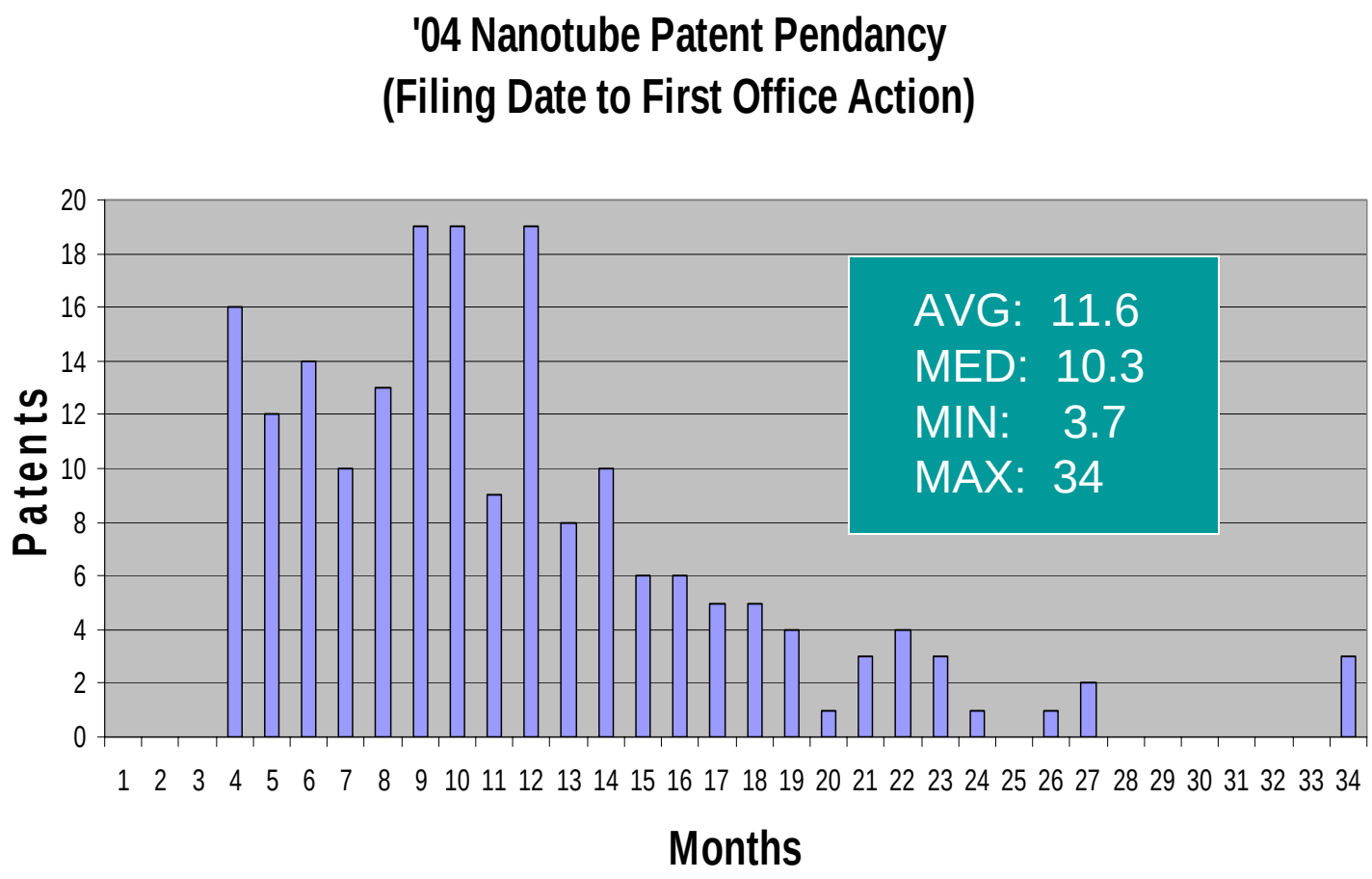

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’04 Nanotube Patent Pendancy – What the Data Suggests

- USPTO pendancy not likely to get better.
- If pendancy too long, options include file petition to make special, conduct search, and file narrow claims.

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’04 Nanotube Patent Examination Rigor

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- 23% First Office Action Allowance
- 77% First Office Action Rejection
  - 58% Section 102 Rejection
  - 52% Section 103 Rejection
  - 20% Section 112, Para. 1 Rejection
  - 13% Based Rejection on Non-Patent Literature
- Nearly 90% were allowed before a final rejection

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- High rates of allowance suggests less rigorous examination.
- Applications spread too widely, may impact quality.
- Rejections readily overcome supports notion of less rigorous examination.

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- Take what you can get, and move on.
  - Minimizes pendancy to optimize patent term
  - Earlier credentialing of technology
  - Reduces initial prosecution costs

- Consider searching to supplement record. Supply ample non-patent literature.

- Interview to teach and minimize written record.

- Do “extra” due diligence when considering licensing or investing in nanotube patents.

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’04 Nanotube Patent Landscape

Claim Statistics

Average:	23
Median:	18
Min:	1
Max:	206

Government Funding

Percent Receiving Gov’t Funding: 16%

Assignee Country

Percent U.S.: 51%

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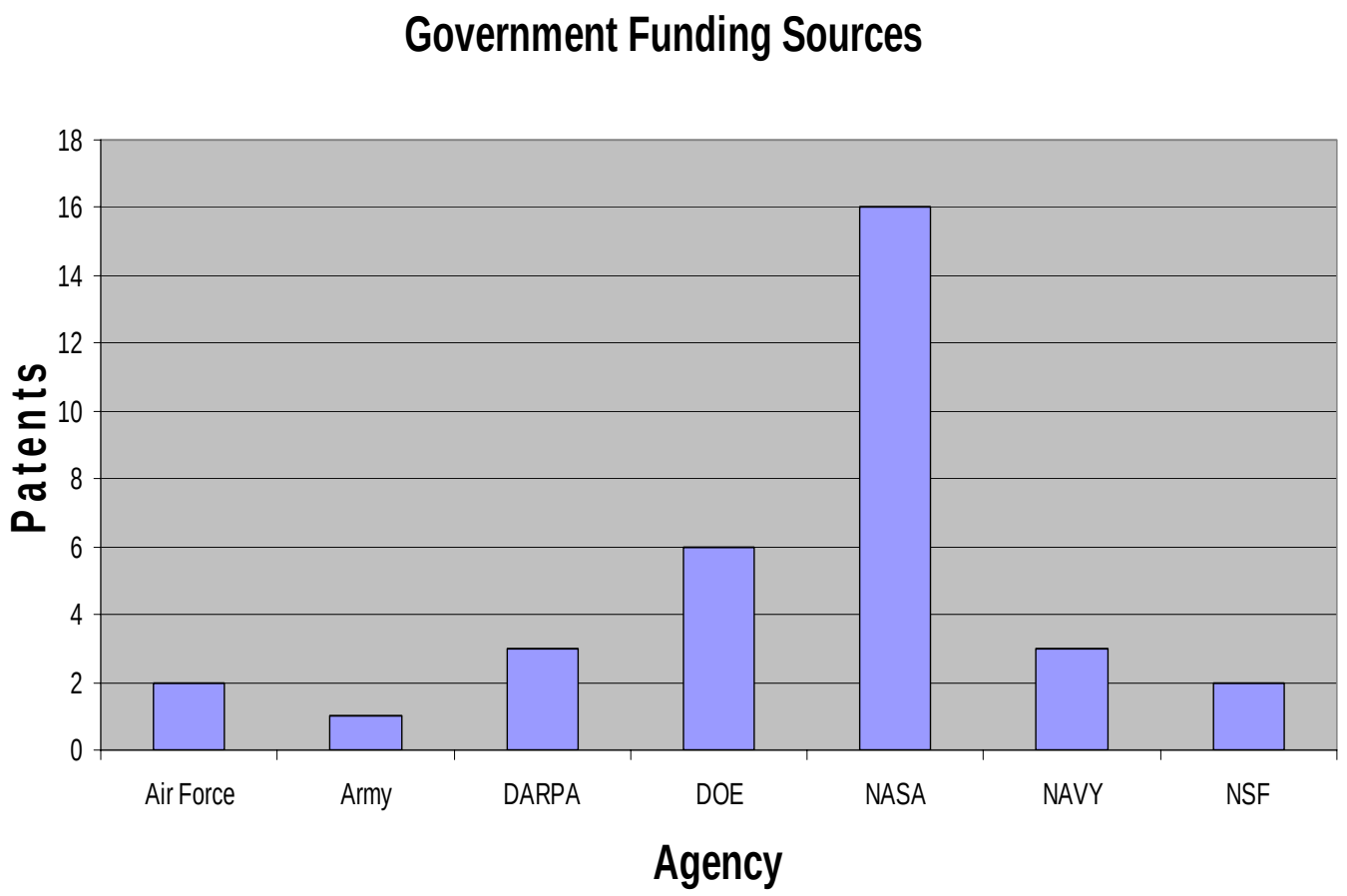

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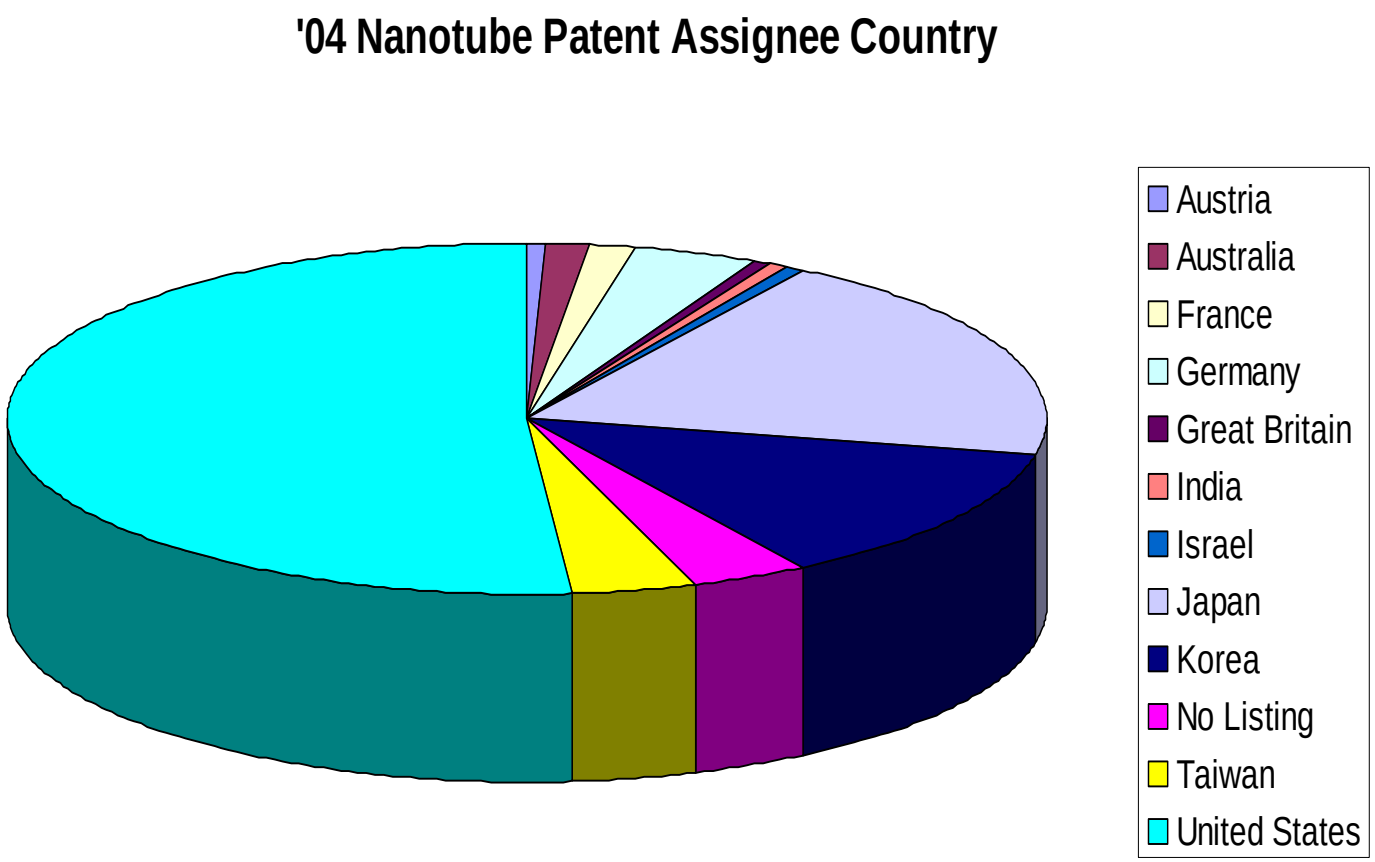

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Most Common Assignees

Samsung:	14
Rice University:	12
Daiken Chemical Co:	11
Hitachi:	08
Nakayama Yoshikazu:	08
Industrial Tech Res. Inst.:	07
Nantero:	06
Advanced Micro Devices:	06

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Nanotube Patent Landscape

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Nanotube Flow Sensing Device (6,718,834)
Issued Patent:

1. A flow sensing device useful for measurement of liquid flow velocities along the direction of the liquid flow and irrespective of a nature of the liquid, said device comprising at least one carbon nanotube, said at least one carbon **nanotube being arranged between at least two conducting elements**, the two conducting elements connecting the at least one carbon nanotube to an electricity measurement device **for measuring electricity generated as a function of a rate of flow of the liquid**.

Nanotube Treatments for Medical Devices (20050096509)
Pending Application:

1. A medical apparatus comprising: a medical device sized for insertion into a patient, the medical device having a first surface, and a second surface; and, a plurality of ***nanotubes*** associated with the first surface of the medical device.

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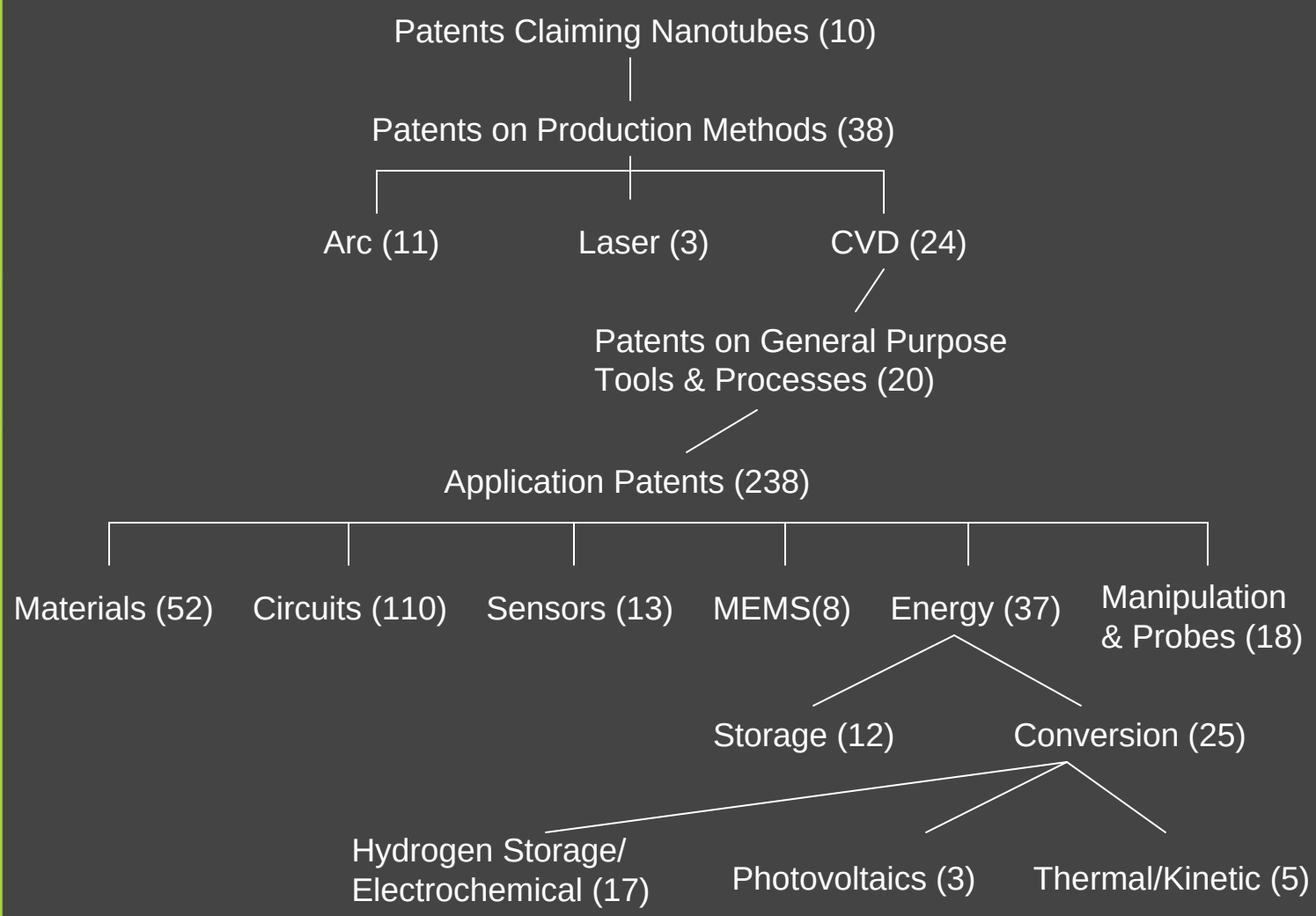

Source: The Handbook of Nanotechnology

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