Newsletter

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mechanicalAspire

Achievements in Sports, Projects, Industry, Research and Education

All About Nobel Prize-Part 6 | Predicting Nobel Prize recipients

Thomson Reuters analyst David Pendlebury makes impressively accurate predictions of who will win the Nobel Prize. How he does this is explained in an article "The Art And Science Of Nobel Prize Prediction"

Every May, for the past 10 years, Thomson Reuters analyst David Pendlebury has sat down and pored through academic papers, searching for a glimmer of glory. On the hunt for scientists who deserve a Nobel Prize, Pendlebury sifts through papers on topics from macroeconomics to macromolecules, judging their influence on their respective fields and choosing scientists whose work stands the test of time. PopSci talked to him about his methodology — the science behind predicting the science Nobel winners.

Pendlebury's picks include physics, chemistry, physiology/medicine, and economics — the Nobels for science, whose impact can be measured. Peace and literature are somewhat more subjective. Pendlebury begins with academic citations, he explained in an interview. Thomson Reuters is the only group to predict Nobel winners based on data, not just a bookie's odds, and **has been quite accurate so far, correctly picking 26 recipients in the past decade. Last year,** every single winner **was previously predicted, either in 2008 or 2010.**

Sometimes Nobel Prize winners are easy to spot; Francis Crick and James Watson, for instance, whose DNA-structure Nobel is 50 years old this year, were shoo-ins for an eventual win. But sometimes there are sleepers, and sometimes a victory comes fast on the heels of a finding, like Andre Geim's and Konstantin Novoselov's 2010 win for six-year-old papers on graphene. And, of course, sometimes there are snubs.

"We pay particular attention to highly cited papers, which are the rare birds in research," Pendlebury said. "The data so clearly emphasize which few people are at the top end of that distribution. It's like looking at a peak of a mountain — it's easy to see, sticking out right there at the top."

But the mountaintops have to form first. Often, decades of work must bolster original research before it's clear that its author is worthy of a Nobel Prize. The Nobel Committee chooses winners based on nominations and peer review; Pendlebury finds candidates by searching Thomson Reuters' journal article database, called the Web of Knowledge. Academics can use it to find scholarly articles of interest to them.

Among a wealth of searchable data, it correlates papers with others that have referenced them, providing insight on a paper's impact, Pendlebury said. "Papers that are cited a lot are influential, or at least have utility. We do not claim that high citations equal quality — that is a human judgment," he said. "But there is a strong correlation between high citations and the people who end up getting Nobel Prizes."

Armed with well-cited and well-regarded papers, Pendlebury moves on to an analysis of the field. He'll study topics like epigenetics or welfare economics and ensure the mountaintop researchers really are the pioneers in that field. Then he'll study the field itself — is this something that counts as a major breakthrough in physics, chemistry, medicine or economics, and if so, has a researcher in this field won a Nobel in the past? Finally, he'll look at other citations, including some specialist awards that tend to foreshadow the Nobels. If all these criteria are met and the scientist in question is still living, he or she will make Pendlebury's list. He wraps up the process by September.

"We are not saying the people whose names we are putting forth this year will win this year — we actually have done that before, but we're not trying to do that. We're trying to recognize the Nobel-class people," he said. "The people we've named in previous years, we think, are as good of contenders."

This year's citation laureates include two researchers who published pioneering work on genetic regulation, which Pendlebury thinks is ripe for a prize. In economics, he cited two economists who have studied income inequality and poverty, an important political topic throughout Europe and in the U.S. in the past year. In physics, Pendlebury calls out quantum teleportation, but not the Higgs boson, noting the Nobel committee has historically been conservative in recognizing new breakthroughs.

The graphene winners are one exception to that rule — and one Pendlebury correctly predicted. Geim and Novoselov published their original papers in 2004 and 2005, so if the Nobel committee followed past trends, it would be a while yet before they'd be acknowledged — in physics, the average time from publication to prize is 25 years. "But it was clear from the rapid accumulation of citations of those papers that this was really an exceptional discovery," Pendlebury said. He cited them as Nobel-quality citation laureates in 2008. They won in 2010.

He said he makes predictions to demonstrate that citations are a clear indicator of a particular paper's value to scientists — but it's more than that. "We also do it because we want to give recognition and honor to the scientists who have achieved the highest level," he said. "There are so few Nobel Prizes given out, relative to the people who are in a position to win them."

(article reproduced from popsci.com)

http://www.popsci.com/science/article/2012-10/how-predict-future-nobel-prize-winners

http://thomsonreuters.com/press-releases/092013/nobel-laureates

Info to Alumni- Campus Update

THE HINDU- SSN T20 CUP 2014

Dr.P.Balaji

The proud inauguration of our prestigious All India Inter Collegiate Cricket Tournament, THE HINDU- SSN T20 CUP 2014 was held on the 5th May at 9.00 a.m. at our new cricket stadium.

The following teams participated in the tournament.

1. Xavier's College, Jaipur
2. Capital Law College, Bhuvenswar
3. Christ University, Bangalore
4. SSN College of Engineering
5. Gurunanak Arts College, Chennai
6. BMS Engineering College, Bangalore
7. Dr. L.Bullayya College, Vaizag
8. RKM Vivekananda College, Chennai
9. R.A.Podar College, Mumbai
10. Sacred Heart College, Cochin
11. JNTU College, Hyderabad
12. Loyola Arts College, Chennai

The valedictory function was held on the 12th May at 4.00 p.m. at our new cricket stadium.

Mr.V.B.CHANDRASEKAR, Former Indian Cricketer was the chief guest for the function and the President of SSN institutions, Mrs.KALA VIJAYAKUMAR was the guest of honor for the event.

Overall Champions:Sacred Heart College, Cochin (Prize Rs.1.lakh)

Runners Up: SSN College of Engineering (Prize Rs.50,000)

Info to Alumni- Department Update

The project done by a group of ECE final year UG students titled "Autonomous Navigation of a Pentacopter" **guided by Dr. K. Babu and Dr. Prita Nair** has won the first prize of Rs. 3000/- in the project exhibition conducted by ECE Department. This project exhibition was judged by 2 Senior Engineers from Caterpillar.

Dr.K.Subbaiah promoted as Professor

External Recognition

Dr. M.S.Alphin, served as domain knowledge expert member for assesing a Project Proposal for TePP Outreach cum Cluster Innovation Centre (TOCIC), Promotion Innovations in Individuals, Start-ups and MSMEs (PRISM), Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Govt. of India.

Dr. M.S.Alphin, served as invited external expert member for assesing the Project works of undergraduate Students at VIT University, Chennai.

Dr.K.S.Vijay Sekar reviewed a paper for the Journal of Institution of Engineers (C), Springer.

Dr. S. Soma Sundaram reviewed a course for National Programme on Technology Enhanced Learning (NPTEL) - Phase II

External recognition...

Dr. K. Babu reviewed a technical paper titled "Cooling characteristics of water based nanofluids with agitation" for Materials Performance and Characterization, ASTM Journals.

Dr. D. Ananthapadmanaban, has completed a review for the International Journal for Control Engineering and Technology

Dr.D.Ananthapadmanaban has completed a review for the International Journal for Control Engineering and Theory

Dr. B. Anand Ronald, reviewed a paper for the International Journal "Science and Engineering of Composite Materials"

Statistics on SSN Trust funded projects and output

Mech dept received 10 internally funded projects in 2012-13.

From these projects, 8 papers have been published, 5 in international journals and 3 in international conferences. 1 patent has been filed. 1 external project has been applied.

Research Activity

Dr. K. Babu along with Prof.T.S. Prasanna Kumar purblished a techiical paper titled "Comparison of Austenite Decomposition Models during Finite Element Simulation of Water Quenching and Air Cooling of AISI 4140 Steel" has been published online in the Springer Journal of Metallurgical & Materials Transactions B.

Conference Paper by K. Babu and Naveen (PG Student). Title: Optimization of surface grinding parameters using teaching learning based optimization algorithm on 2 & 3, May, 2014 at VELS University, Chennai.

Conference Paper by Dr. K. Babu and Karnam Dileep (PG Student). Title: Evaluation of Cutting forces and Temperature during turning of AISI 4140 steel using MQL with CNT Nanofluid, Accepted for presentation in the International Colloquim on Materials, Manufacturing and Metrology to be held during 8-9, Aug 2014 at IIT Madras.

Mr.L.Poovazhagan's paper titled "Dry Sliding Friction and Wear Properties of SiC Nanoparticulates Reinforced Al Matrix Nanocomposites" has been accepted for presentation in the "International Colloquium on Materials, Manufacturing and Metrology (ICMMM-2014)" to be held on 8 & 9 August 2014 at IIT Madras, Chennai, INDIA.

Dr.K.S.Vijay Sekar and Dr.S.Suresh Kumar along with PG students, Mr.Allwin Roy and Mr.Gobivel, had their paper titled" High Speed Turning of Carbon Fiber – Epoxy Composite Material" presented in the 8th International Conference on Science, Engineering and Technology (SET), 6 – 7th May, 2014

Dr.K.S.Vijay Sekar and Dr.S.Suresh Kumar along with PG students, Mr.Gobivel, Mr.Allwin Roy had their paper titled "Finite element simulation of the machining process with CFRP material" published in the International Journal of Innovative Research in Science, Engineering and Technology, Volume 3, Special Issue 3, pp.1326-1329,March 2014

D.Ananthapadmanaban,Amitesh Jain,Akhilnandh Ramesh and Kirthivasan's paper-A review of Energy materials used in harnessing Non-Conventional energy sources has been accepted for presentation at ICEM-2014-Sathyabama University,July 28th-30,2014

Training

Dr.K.S.Vijay Sekar organised a one day training programme on EDGE CAM machining software for the benefit of the technical staff in the CAD lab.

Dr.K.S.Vijay Sekar and Dr.A.K.Lakshminarayanan conducted Internal interviews for the M.E. Manufacturing students who aspire to take up project work at IGCAR.

Project Efforts

Dr. A. S. Ramana and Dr. N. Lakshmi Narsimhan, Associate Professors have submitted a project proposal to DST -Solar Energy Research Initiative (SERI) Call .

Accreditation Efforts

Under the leadership of Prof.N.Nallusamy, the team comprising of Dr. S.Rajkumar , Dr.L.Poovazhagan and Dr.S.Somasundaram, has compiled and completed the submission of our application for NBA Accreditation.

Faculty Write up- Passive House-Trends in energy savings

Jayakishan.B

The Passive House (or Passivhaus) (PH) was first established in Germany and is quickly becoming a standard in many parts of the world, including the United States. Whereas other important standards, (such as LEED), focus on many environmentally friendly aspects of the home, such as site location, sustainability, materials, water efficiency and so on, Passive House only focuses on energy and ventilation. For some homebuilders, this puts a more focused concentration on the energy aspect of home design.

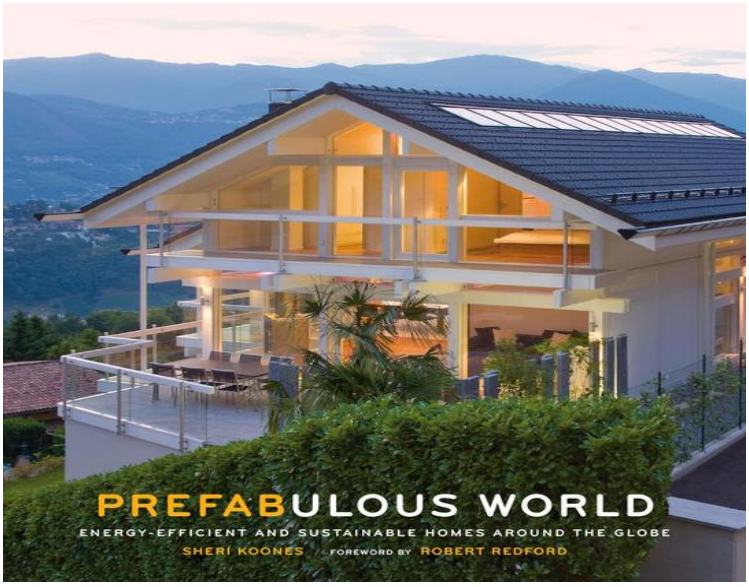
The PH Kenmore Road House, designed by architect Jay Fulkerson, was built using prefabricated insulated concrete panels.

Because this house was built with many energy saving aspects, the energy requirements are minimal.

The owners of the house claim that in a past very cold winter their heating bills were between $30 and $35. This house is located in Chapel Hill, North Carolina. Photo courtesy of Kent Corley.

Energy consumption for space heating and cooling in a Passive House is designed to save approximately 75 percent of the entire energy used in typical buildings. The requirements for certification are stringent and specify maximum heat and cooling demand, total primary energy consumption, and a maximum leakage of air volume per hour at 50 Pascal pressure, which is measured with a blower door test. Passive Houses are designed with super-insulation, high performance windows, an airtight building shell and the use of an energy recovery ventilation (ERV) to exchange the interior air with fresh outside air. Since Passive Houses are so airtight, ventilation is needed to keep the air fresh and healthy inside the house.

While some do include active solar systems - photovoltaic and hot water solar systems - and geothermal systems, to reduce the need for fossil fuel sources, many Passive Houses do not include these systems. **Passive Houses are built with a primary goal - to limit the need for energy and reduce the demand for its production.**



There are currently over thirty thousand houses built to this standard - this is likely to increase as energy costs continue to rise and people become more concerned about the reality of global warming. Many homeowners will choose to build their houses to Passive House standards because they are attractive, can be built in a wide range of climates and are affordable. These houses are cutting edge examples of home design. Passive House methods are being adopted by the best in the business, and with its versatility will likely rise in popularity and be adopted as a standard by others.

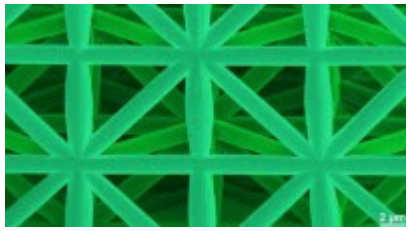
More info at http://www.huffingtonpost.com/sheri-koones/passive-house-the-house-o_b_5276286.html?utm_hp_ref=email_share

Amazing Innovations-1

High-strength cellular ceramic composites with 3D microarchitecture

Researchers in Germany have developed a lightweight, high-strength material inspired by the framework structure of bones and wood and the shell structure of bees' honeycombs. Created using 3D laser polymer printing combined with a ceramic coating, the material is less dense than water but, relative to its size, boasts strength comparable to high-performance steel or aluminum.

Although inspired by nature, the polymer microarchitecture produced by a team at the Karlsruhe Institute of Technology (KIT) outperforms its natural counterparts in terms of strength/density ratio. The underlying structure was produced using a process of 3D laser lithography or polymer printing and hardening.

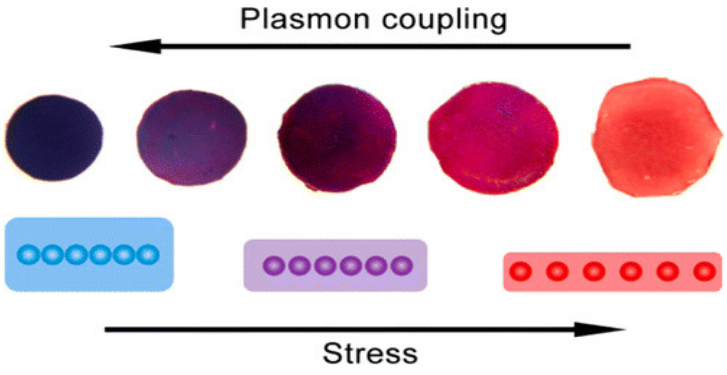


A number of structures were tested, including triangular, hexagonal and honeycomb. These were then coated by gas deposition to provide extra strength, with coatings of a ceramic material and alumina both tested. The polymer structure measured roughly 50 µm long, wide, and high, while various coating thicknesses were tested ranging from 10 nm to 200 nm.

It was found that a honeycomb polymer structure with an alumina coating of 50 nm yielded the highest stability to density ratio. This microarchitecture outperformed the triangular and hexagonal counterparts produced and tested, while no additional strength was achieved after a coating thickness of 50 nm of alumina was exceeded. This optimized honeycomb structure failed at a pressure of 28 kg/mm^2, yet only had a density of 810 kg/m^3, which the team says exceeds the stability/density ratio of bones, massive steel or aluminum. More details at

http://www.pnas.org/content/early/2014/01/29/1315147111

Amazing Innovations-2 | Sensor that changes colour when stressed



Researchers have reported the development of a stress-responsive colorimetric film that can memorize the stress it has experienced.

The system is designed by taking advantage of the plasmonic shift associated with the disassembly of one-dimensional gold nanoparticle chains driven by the plastic deformation of the surrounding polymer matrix.

By modifying the plasticity of the polymer, it is demonstrated that the plasmonic shift and colorimetric change respond to a large range of stresses. This novel pressure indicating film can be used to capture and record the pressure distribution and magnitude between two contacting or impacting surfaces by outputting color information.

Whether you're manufacturing cars, phones, sports equipment or pretty much anything else, a key part of the design process involves measuring the amount of mechanical stress experienced by different parts of the product. Thanks to research being conducted at the University of California, Riverside, doing so may soon be much easier. Scientists there have created a film that changes color when subjected to pressure, making it easy to see where objects coated *with* the film may need reinforcement.

While other pressure sensor films do already exist, they all work by changing the intensity of just one color. Because the UC Riverside film actually changes between different colors, however, it is reportedly much easier for the unaided eye to "read."

It's made by stringing gold nanoparticles together, which are then embedded in a polymer film. When little or no pressure is applied to the film, the closely-spaced particles reflect light in a blue color. As pressure is applied and the film stretches, however, the spaces between the particles become larger. This causes them to gradually change in color, until they appear completely red.

Even once the source of pressure is removed, the stressed sections of the film remain red, allowing researchers to see which areas need attention.

Lead scientist Yadong Yin states that the film can be painted onto objects, allowing it to conform to curved and uneven surfaces – this is *not* the case with many existing alternatives, that only work when laid flat. He says that it could also be made using nanoparticles composed of less expensive metals, such as silver or copper. (**DOI:** 10.1021/nl500144k)

A paper on his research was recently published in the journal *Nano Letters*.

Source: University of California, Riverside

Alumni News

Lakshmi Madhavan , of 2007-11 batch, completed her Masters in Industrial Engineering at University of Florida and is now **Performance Engineer at Cummins Inc., USA.**

Corporate Wisdom - 6

If you think others are more qualified..

If you think you have to work to earn...

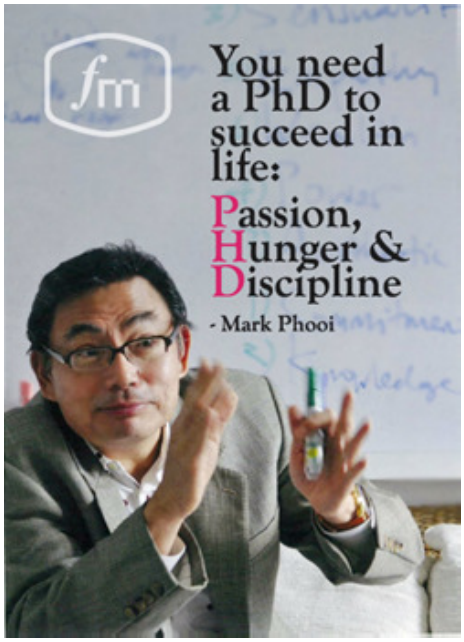
If you think happiness is elsewhere....

If you blame others for your low position....

Then this article is for you...

Mr.R.Ramakrishnan,
Advisor, GMR Group

Academic qualifications can give an entry to the professionals for entering an organization, but there after it is the ability and drive of the person to be successful in life and career . There is enough evidence and research to show that winning and being successful in life has little to do with academic qualifications.



So you might be wondering why you need a PhD to achieve you goals in life and be the best you can be. Yes, you read it right.

We all need a PhD , not the conventional Doctorate , but something more than that .

What is PhD in life and career ? It is the new mantra or formulae for success.

It stands for Passion, Hunger and Discipline!

Get them all. And see the difference. Becoming a Passionate, Hungry and Disciplined person can put you on the road to realizing your true greatness.

Passion: Do you enjoy what you are doing? Do you love your work? It's extremely important that each of us can answer those questions with a resounding 'Yes!' Passion helps ensure that you jump out of your bed every morning and get to work on your goals. Not because you have to, but because you love to. Passion makes those long hours spent at work seem worthwhile because you are having fun, enjoying every moment. Outstanding results are achieved not through better resources or bigger budgets.

They are achieved by people madly, wildly, excited by their ***personal mission*** to be the best. I remember reading in a book where Martin Luther King once said: "If a man is called to be a street

sweeper, he should sweep streets just as Michelangelo painted, or Beethoven composed music, or Shakespeare wrote poetry. He should sweep streets so well that all the hosts of heaven and earth will pause to say, here lived a great street sweeper who did his job well." Would they be saying that about you? Are you aiming to be the best "YOU" in the whole world? It's nice to be able to do what you love. But it's important to love what you are doing!

Hunger: How badly do you want to win? Are you really, really hungry for success? It's when you really want something that you start to go after it, and do all it takes to get it. If you want to win, you must first want to win. Get hungry. And yes, no one else can feel hungry for you.

You've probably heard the story of the young man who went up to Socrates and said he wanted to get wisdom. "Come with me," said Socrates and took him along to a river. Without any warning, Socrates pushed the man's head under water and held it there. The man did not know what was happening. He struggled for air. He moved his head, flailed his hands desperately seeking to get his head above water for some air. Socrates finally let go and asked him "What did you want when your head was under water?" "I wanted air," said the man. "Right," said Socrates, "when you want wisdom as badly as you wanted the air – you will get it!" So how badly do you want to win?

Discipline: And once you have the passion and the hunger, you'll probably see a road emerge in front of you, leading you to your goals. There will be obstacles on the way, there will be roadblocks, but you will need discipline to keep doing the right things, time after time after time. You need the discipline to stick on the path. Nothing of substance was ever achieved without discipline**.**

An Olympic Gold medal-winning gymnast was asked the secret of her success. Her response: "I practiced when I felt like it. And also when I didn't!" Success demands discipline. Slogging and staying the course – particularly when you 'don't feel like it' – is often the key to success.

Never mind what you are doing now, commit yourself to becoming **a PhD. A Passionate, Hungry and Disciplined person.** Success is calling. Are you ready?

Have a wonderful day !

R.Ramakrishnan

for more such info, explore the blog of Phooi at

http://firstmediadesign.blogspot.in/2009/09/personal-life-lessons-by-mark-phooi.html