

Result-Oriented Strategy to Establish a Research School from Scratch

Raising Huge Funds with No Start-up Budget

The Story of Fostering
Research Culture in the
Middle of Nowhere



School of Materials Science & Engineering

JIMMA UNIVERSITY

<http://mse.ju.edu.et>

Similar things are not formed in similar ways. Some people earn, some inherit; some universities gain from exceptional history, some find exceptional creativity to mutate. However, the current competitive market necessarily needs thinking out of the box, as you never know what secret weapons your competitors might have.

All people are ambitious, but a few find the practical path. The President of Jimma University, Dr. Kaba Urgessa (now Minister of Education) had this challenge to create a world-class research school as a role model in his university. He knew that the key point is not money, as neighbor Arab countries fueled billions of oil dollars, but still no genuine higher education system. Relying on high salaries, these universities usually hire retired professors who were good in the well-developed system of their home countries, but not creative for challenging start-ups. He came to conclusion that one key person is needed to develop a native plan by international models, rather than attracting a collection of people. The quest led to Professor Ali Eftekhari who had a multi-dimensional personality and skills, and previously established a world-class research department from scratch.



A week with our visitors from
Colorado State University

It took almost 3 years to convince him to assume the job, but worth it. The School is now unique in Africa from different aspects, and secured fund to have advanced research facilities (e.g., TEM, SEM, XRD, XPS, etc) worth of \$10 million, comparable with similar departments in top universities.

BUDGET

In Africa, feasibility and benefits of a project do not justify the budget, as it is too complicated. This is where most ambitious plans are stopped. Hard to believe, but Prof. Eftekhari established the School of Materials Science & Engineering at Jimma University with almost zero budget by borrowing unused resources across the University.

BUREAUCRACY

Everything is government-centered in developing countries. In Ethiopia, detailed curriculum for any new program should be reviewed by different national panels to get approved. By strategically preparing the curricula (each over 300 pages) according to the world-class standards and local expectations, 14 detailed curricula (3 BSc, 4 MSc, and 7 PhD) were prepared and approved quickly just in the first round.

ACADEMIC STAFF

African governments have just realized that materials are the backbone of sustainable development; but how to start with no local professional? How to attract highly qualified people to an unknown place. Instead of struggling, Prof. Eftekhari personally taught 70% of the PhD courses in the first semester. By surviving the first stage with an exceptional quality of education, the School achieved incredible international recognition.

HEADHUNTING

Although, academic staff were selected from over 5,000 applications with excellent records of publication, Prof. Eftekhari traveled across 15 European countries to discover talents with a headhunting strategy.

RESEARCH CULTURE

Students are usually left to learn practical skills in action. With a subtle strategy, a series of practical courses were conducted by Prof. Eftekhari for both graduate students and academic staff about research planning, proposal writing, manuscript writing, lecturing, presentations, etc. No wonder that the first research proposals written by the graduate students were acceptable, as they exactly knew how to write a successful proposal and convince the reviewers.

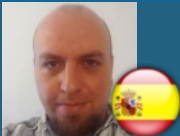
People think medicine can improve the poor life expectancy in Africa, but most of deceases have root in improper lifestyle due to the lack of appropriate materials (from living environment to food handling). A simple example is construction materials for buildings, roads, etc. As a matter of fact, the underdevelopment of materials science science & engineering is actually taking lives in Africa.

First, African governments spend most of their budgets for importing different types of materials. Second, these materials have not been designed indigenously. Third, there are not professional to properly use these materials. This project is indeed game changer to save lives and create new opportunities of living for those who never had.

Beside the academic aspects of this project, an immediate focus was to resolve local problems. Several practical projects were initiated to produce construction materials, water filters, biofuel, etc. In parallel, long-term native plans for renewable energy were started to bring light to rural houses.

This tangible outcome empowered the team to fight against the odds, as they knew they are actually saving lives, lives of people whom they see everyday.

The Founding Team



Dr. **Pablo Corrochano**
Universidad Castilla la Mancha

Dr. **Balaji Ramanujam**
Boise State University



Dr. **Pierre Dramou**
China Pharmaceutical University

Dr. **Edmund Samuel**
Toyota Technological Institute



These kinds of projects have many interesting features, but also need huge sacrifice of people who left their homes and jobs to create opportunities for students who could never have such chances. This is an exceptional academic experience, but their achievements are not tangible for most search committees.



"The most difficult moments of this project were when I should encourage my staff to ignore tempting job offers, and struggle with our challenging issues. I still feel the guilt for keeping Pablo away from his new-born son in Spain.", Prof. Eftekhari says.

To avoid official obstacles, Prof. Eftekhari used to pay small expenses of the project himself. Soon the entire team donated part of their salaries. The secret behind this incredible success was due to the huge sacrifices made by the team who truly believed in their mission.



Dr. Danuta Witkowska
University of Opole



Dr. Umesh Chandra
Kuvempu University



Dr. Seidjolo Quenum
University of Manchester



Dr. Rakesh Ashok
Flinders University



Dr. Bhavana Joshi
Korea University

Professor Ali Eftekhari academically started to study chemistry at age 11, and conducted his first independent research project at 15, which was published in a leading scholarly journal. He earned his PhD by 22; while working on a federal project supported by the US Vice President Al Gore.



In over two decades of living in academia, he has founded two departments from scratch, developed over 30 academic programs, and supervised over 110 graduate students and postdoctoral fellows.

He is the principal author of over 100 research articles (h-index 25), and editor of several reference books and journals. The uniqueness of his research is that he personally plans the research, analyzes the data, and writes the manuscript.

He serves more than 40 leading journals as a regular reviewer. He is an active member of 26 learned societies, and has organized/chaired several international meetings. He has developed several software programs. He has worked in universities across 4 continents.

He pays a particular attention to details, and manages tiny things to control his system as a whole. He even designs the lab interior to create an ideal environment for teamwork. He runs interdisciplinary discussions with his team everyday.



This successful story rooted in another legendary project a decade ago when Prof. Eftekhari established the Department of Electrochemistry at Materials & Energy Research Center, which was the country's largest graduate school founded by leading electrochemists such as Professor John Own (now at Southampton University) and Professor John Goodenough (now at University of Texas at Austin).



He was invited to build a national role model for cutting-edge research, in a special era when most Iranian politicians were academics; even the Iranian Vice President (pictured left) was a university professor graduated from Stanford University. The ex-Vice Minister for Research (in the picture too) was also a faculty member of this new Department. In its peak, the Department used to publish 5% of the country's high impact papers. International recognition of his works resulted in the formation of local section of the International Society of Electrochemistry (incredibly, just his MSc students delivered 11 lectures in the Society's annual meeting).

The exceptional success of this project secured a special fund by the Iranian Vice President to expand the project into a Nano Lab with over \$7 million research facilities. Unfortunately, Prof. Eftekhari left the country after the conservative government came to power, but the Nano Lab is still the largest of its kind in the Middle East.



Prof. Eftekhari explaining the national project for the Iranian Vice President and Minister of Science.

In recognition of his outstanding contributions, **Prof. Eftekhari** was nominated by 6 executives of the AAS to be exceptionally elected as a **Fellow** (which is limited to African citizens only) of the *African Academy of Sciences*

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