

## High Profile Researcher: Prof. Dr. Ahmad Fauzi Ismail

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### Profile Overview

Ahmad Fauzi Ismail is a full Professor at Faculty of Chemical and Energy Engineering and Deputy Vice Chancellor of Research and Innovation at UTM. Currently, he is the Deputy Vice Chancellor of Research and Innovation, UTM. His research interests include the development of novel polymeric and inorganic membranes for water desalination, waste water treatment, gas separation processes, palm oil refining, photocatalysis, hemodialysis and fuel cell applications. He has authored and co-authored for more than 500 refereed journals, 6 books, 45 book chapters and 4 edited books. He has been granted 4 patents and 16 patents have been filed. He has an astonishing h-index of 58, with cumulative citation of over 14,000. He has won more than 120 national and international awards. He is a Fellow of The Academy of Sciences Malaysia, Chartered Engineer in the UK (CEng) and the Institution of Chemical Engineers (FIChemE). Prof. Fauzi has extensively involved in R&D&C for national and multinational companies related to membrane-based processes for industrial applications. He is also the founder of Advanced Membrane Technology Research Center (AMTEC), which is now recognized as the Higher Education Centre of Excellence (HiCoE). Recently, the editor of MJFAS has interviewed Prof. Dr. Ahmad Fauzi Ismail as part of the efforts to highlight prominent figures in the field of Science. This article summarizes the essence of the interview.

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### What are the big issues in your research area?

Currently, I am addressing the development of a versatile and feasible membrane for desalination as one of the biggest challenges in my research area. Although the earth is covered with 70% water, only a fraction of it is safe for usage (freshwater), whereas the rest is seawater. Desalination is the process of “desalting” the seawater for consumption. So far, membrane technology is one of the most promising approaches for desalination. However, the overall cost is still high and the efficiency has yet to reach a satisfactory level. And I strongly believe that with advanced nanotechnology, some of these underlying issues can be resolved.

### What is innovative about your research?

As mentioned earlier, Membranes do it all — drinking water, wastewater, desalination, reuse, industrial process water, produced water. Hence, we can innovate the technology depending on the needs, demands and expectations of the research communities and industry stake holders. It is worth mentioning that, continued technological advancements, particularly in the field of nanotechnology, have been critical in propelling the membrane development forward.

### What has been the impact of your research?

Perhaps the translational aspect of the research holds the biggest impact to the society and industry. Leveraging local expertise to develop membrane technology for clean water for Malaysia proves that research output is not only confined in the lab and limited to bench-scale research. Instead, we need to apply our research for the benefits of society and nations.

### What experiences have you encountered during your academic career that turned out to be beneficial in your career in research and development?

I could not stress enough on the importance of team-working and being humble. During the early days of my career, I always offered myself to contribute and I never missed any opportunity given to learn from my mentors. Fortunately, I was given full supported by my mentor. In my present research group, I always strive to instill these values to my team members and collectively we are going further and beyond than what an individual could achieve.



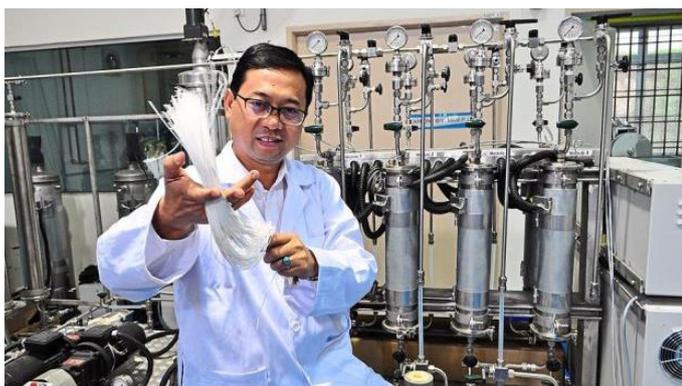
### How would you bridge the gap from your research and research users?

I would start by looking at the national key focus area, the global agenda and the current issues. It does not really matter if we look at them globally or locally, but rather to the best of our research capacity. Most of the breakthrough researches are born from the curiosity of many great minds which are also supported by their academic assumptions and hypotheses. We should always expand our innovation by looking

at the applications of our research to both industries or general public. Through these approaches, we are somehow translating the funding that we are receiving, which is the tax-payers' money, to the welfare of nation. This, for me, is the most straightforward approach to deliver the importance of conducting research to the public.

### How have you been managing your research project?

By working in a team. I adopted a 'yes-first-worry-later' attitude in getting funding for research projects. I would rather try than missing the opportunity to achieve the expected result outcomes. If you are working alone, then you will spend more time managing than doing the actual research. By working together, we can have different project managers for each project. Apart from training the younger generation, we can work more efficiently and increase the productivity beyond imagination.



### How would you deal with the depleting resources or facilities compared to what you anticipate for the project?

There are a couple tricks we can apply. One of them is strategic partnership or collaborators. Whenever looking for research collaborators, we have to let the reality sink in to figure out what contribution that our potential partners can bring to the table. This is when we can leverage what our partners have in order for us to engage in more projects. With the current scenarios, we can easily identify and look for our research collaborators. The best place to start with is the researchers who are currently working in your research field. They can be a speaker in conference, your ex-PhD supervisors, your international students, your friends in the industries. It is important to initiate the collaboration by offering what we could contribute before we are asked to. This small touch works wonders.



### How would you convince a funding body that they should fund your research rather than all the other hundreds of proposals they receive?

Start with extensive literature survey and find your niche in the proposal. Once you have identified that, try to relate to the national agenda and the societal impact of the proposal. By doing this, you are making your research matters to both the academic world and the non-

academic world. Instead of writing a lengthy proposal, we should focus on writing a compact and informative proposal that provide straightforward solutions to address the problems of stakeholders.



### How was AMTEC founded?

AMTEC was known as MRU, which stands for Membrane Research Unit, founded by Prof. Hamdani, my Msc supervisor, in 1990. During the transition period from my Msc to PhD studies, I always looked for something that can contribute to the scientific community and public. Co-incidentally, I found a few lines in the Al Quran which states the existence of both salt and plain water. These two types of water meet but doesn't mix together, which is the results of barriers. These barriers, in modern science, are known as membranes. So scientists use this technology to produce drinking water from sea water. I was strongly inspired by this idea as I believe everything that is written and said in the Al Quran can be trusted with full confidence. In fact, one of the best usage of membrane technology is in solving kidney failures problems through a process known as hemodialysis. To address the issues related to ever increasing number of kidney failure patients and decreasing financial support, our research centre is now looking into the possibility to produce our home-grown hemodialyser.



### Being such a prolific researcher, how do you manage your time?

As I always see myself as someone who poor in time management, I manage my schedule and tasks based on priorities. Also, in most of the cases, It is impossible to handle the tasks given alone. This is when I need the strong supports from my team members. For instance, in 2016, I has published a book entitled 'Gas Separation Membranes' based on my PhD findings and it took almost a year for the compilation. While trying to improve the quality of the book, I invited my co-authors to contribute their ideas. The similar strategy has been used for the other 10 books I have published. It is very crucial to select the team member who can work in the same pace and momentum. We should know our strengths and weaknesses so that the tasks can be distributed based on our expertise. I also feel very thankful for the understanding and supports of my family members. Knowing my busy schedule, they always compromise and allow me to spend part of my family time to complete my tasks.

**On the subject of family, how did they contribute to you being such a great scientist now?**

When my children were at their young age, they used to be very close to my wife. They knew they could get anything and look for comforts from their mother, instead of me. Despite the challenging parenting time, I have always tried my best to establish good relationship with my children. Now, I am a father and also a friend of my children. With more exposure to the nature of my research, they started to appreciate my contributions to the family as well as to the society. This has in turn stimulated me to work harder to be a greater scientist.

**Who are the people and what are the things that really made an impact in your life, be it in academics or your career?**

I wasn't a top scorer in my class. Nevertheless, I have never stopped looking for something that I can do differently that lead me to success. My interest in research started when I was doing my undergraduate final year project. I spent my time reading journals and never be ashamed to ask and discuss with my supervisor. I was fortunate to spend my very good and valuable discussion time with my undergraduate and postgraduate supervisors. Particularly, my masters and PhD supervisors had has made big impact in my life.

**So do see any difference in your days and now?**

The opportunities are abundant nowadays. Especially in terms of networking. I would say that the greatest enemy is ourselves. I used to do my research and write papers without any financial support. There is no such thing as a miracle and passion is the key to success. I always believe that, we have to love our research like how we love our family.

**Since you mentioned that nowadays there are a lot of opportunities for the young people, so what are holding them back?**

I would say that most probably they are short-sighted. They don't look and think far enough.

**In Malaysia, how is the progress of membrane technology?**

I think it is doing well, After putting in efforts for around 15 years by my comrades and myself, I can see the improvement in the last couple of years. Recently, our research team is given 5 million funding for a membrane research to achieve the aspiration of the government. The biggest challenge of this project is to realize the membrane system for commercial usage within the 4-month timeframe. Challenges are constantly coming. This certainly test my abilities in terms of networking and leadership. So what I did was gather all the workforce in AMTEC to work together.

**You mentioned a lot about leadership also. So what is your style of leadership?**

I started to learn about leadership during my university life. For me, leadership involves a big context. It is the way you do something that can attract people to be part and partial of your team. I always practise as a charismatic leader in order to inspire my team to be committed in order to perform at higher level.

**As the Deputy Vice Chancellor of Research and Innovation (DVC RI), what are the biggest challenges?**

The mind-set of the people. One of my biggest challenges is to convince and win people to my way of thinking. I wish all UTM Academic Staff can realize the roles they are playing in the university. By definition, university should be a place where new knowledges are generated. As simple as that, I wish all the staff can truly engage in that. Lecturers can't just teach solely. If only teaching is involved, then it should be named as teachers. It is after all the biggest difference between lecturers

and teachers. What I really want to achieve as the DVC RI is to implement research-based teaching, not book-led teaching.



**What do you think of the I'M Research Consortium (Indonesia-Malaysia Research Consortium), which is the Indonesia-Malaysia network of research-intensive universities and institution, started by us?**

I foresee that this consortium will somewhat be like the EU in the future. EU-Grants are usually given in the form of consortiums. Although the effort put in by UTM may not seem substantial for now, I have personally chosen this consortium as part of the activities to pursue in the Office of DVC RI. I believe it is not all about money. For me, the spirit that we build, the togetherness in making the consortium a success. At least for now it involves two countries, where one of them has the highest number of populations. I can see the potential and will continue to support it.

**Any words of wisdom for students or practitioners starting out?**

To progress, we have to love what we do. We have to accomplish the task given to the best of our capacity. Do not give up or cease to perform your task before the completion or success. Being humble is one of the tips that can make your toughest moment far more managable. Always ask for help if you need it. Never be afraid to aim high, but not without any wisdom. Lastly, find your niche and work for it.

**Editors:**

Prof. Dr. Hadi Nur and Dr. Sheela Chandren.