

Interview with Dr. Dreisinger: New Frontiers in Hydrometallurgy

I am A. Deniz Bas, Ph.D., 2017 MetSoc Emerging Professional in Hydrometallurgy Technical Section. I regularly do short interviews with eminent scientist and professors on mining and metal extraction processes around the world. I am pleased to submit my most recent interview with Professor David Dreisinger of UBC on hydrometallurgy. I believe that this interview would be useful and will especially encourage the undergraduate students who look forward to study metallurgy or related fields.

Ahmet Deniz Bas (Deniz): You have been leading one of the world's most renowned hydrometallurgy group and working at UBC. What would you like to say briefly about your work and academic life? How did you choose to start a career in hydrometallurgy? What was the main reason behind that?

- **David Dreisinger (Dave):** I was a student at Queen's University in Kingston and finished my Bachelor's degree in 1980. I worked for INCO Limited in Toronto at the J.Roy Gordon Research Centre after graduation and INCO offered to support my Master's degree research in Hydrometallurgy. So, working with Professor Charles Cooper at Queen's I chose to work in Hydrometallurgy. I have never regretted the decision. After completion of my Ph.D. at Queen's I came to work with Professor Ernest Peters at UBC in 1984 and have stayed ever since. Professor Peters was a master of fundamentals and able to develop whole flowsheets for recovery of metals in a way that I had not previously understood. I owe a deep debt of gratitude to both Professor Cooper and Professor Peters for the training that I received.

Deniz: What are your thoughts about the recent developments in hydrometallurgy in the world and in Canada?

- **Dave:** I think we are seeing great progress in gold recovery with the advent of commercial thiosulfate leaching at Goldstrike. The leaching of copper from concentrates continues to progress with developments such as total oxidation, Galvanox and Rapid Oxidative Leaching. We are seeing new developments in lead recovery using methane sulfonic acid (INCOR Lead Process), increased interest in processing of rare earths, lithium and other critical metals. **There is no better time to be a hydrometallurgist.**



Professor David Dreisinger

Deniz: How do you see the future of hydrometallurgy in the world and in Canada?

- **Dave:** Hydrometallurgy is a wonderful discipline taking the best of metallurgy, chemical engineering, separation science, electrochemistry, water treatment, etc. to develop novel, economic routes to recovering metals from natural and (increasingly) secondary sources. I see the future as very bright given the demand for metals continues to increase and the challenges of nature are increasing with respect to low grades, increased contamination, need to recover by products.

Deniz: Which countries or processes would be the dominant in hydrometallurgy in the future?

- **Dave:** The Hydrometallurgy community is a (wonderful) global community of scientists, engineers and technical specialists. There are many countries that can claim expertise in hydrometallurgical processing including Canada, Australia, South Africa,

Chile, Peru, China, Japan, USA, Mexico, to name a few. Hydrometallurgy rises in importance in proportion to the opportunity to develop resources. The countries listed are of course of prime importance as sources of raw materials or as key processors of metals. I doubt any country can dominate the others. The worldwide community tends to be cooperative, adaptive and innovative.



Sepon Copper Operation (received from David Dreisinger)

Deniz: What would you like to advise to the students wishing to do graduate studies in hydrometallurgy?

- **Dave:** Graduate studies are a great opportunity to learn and to grow deeper in knowledge of your chosen subject. Seek out an advisor that has many ideas, lots of funding and places to apply the knowledge that is gained. Try to work with industry if at all possible. Industry provides many challenges to a grad student but at the same time focuses the student on relevant topics of current interest. Work hard, prepare and present papers at conferences or colloquia and get exposure for your ideas and your work and learn from others.

Deniz: I know that you are travelling very often, attending conferences, giving courses, etc. It seems very exhausting. How do you manage your agenda?

-**Dave:** When I first came to work with Professor Peters at UBC and he started the Hydrometallurgy Chair, we travelled together extensively to teach courses to the sponsors of the Chair. I have always found the tiredness of travel is best counteracted by the

excitement of being involved in a new project or research topic or seeing new plants/meeting new people. All that plus Air Canada's great international service!

Deniz: How do the projects and subjects in hydrometallurgy change from one country to the other one? What would like to say from your experience?

- **Dave:** I think this naturally follows the country and the natural resources that are present. You would have to expect that Chile would be a centre for study of copper hydrometallurgy and South Africa would focus on precious metals recovery. Canada has a large range of minerals and resources and tends to be a centre in zinc, nickel, gold, copper, lead and critical element hydrometallurgy.

Deniz: May I ask you, please rank your three favourite topics/subjects that you like much in your field/area?

- **Dave:** It is pretty hard to choose three. I would guess pressure leaching, solvent extraction of metals and more recently rare earth recovery and separation.

Deniz: Would you like to add anything else?

-**Dave:** Hydrometallurgy is a key technology to supply raw materials from nature and from recycling to sustain life in the 21st century. There are many challenges left to solve and many exciting career possibilities in this field.

Deniz: Thank you so much for kindly accepting my invitation and for this enjoyable and impressive interview.

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