

Academic Job Search – Chemical Engineering

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Outline

- Discernment (is it right for me?)
- Preparation (what should you be doing now?)
- The Other Side (what does the hiring department do?)
- The Process (what do you need to do to apply?)
- Q&A, discussion

If you want a copy of the slides, ask for them via email: ed@nd.edu

1. Discernment

- What is the job like? What do faculty do all day?
 - Teaching, research, service!
 - **Deeply rewarding profession:** education, advancing knowledge, working with smart, enthusiastic young people; success means enabling others to succeed
 - **Independence:** set your own agenda and schedule; no real “boss”; university culture less confining than corporate culture; tenure; travel
 - **Negatives:** work longer hours for less pay than industry; anxiety over tenure, funding; lots of rejection (grants, papers); delayed gratification; heavy personal responsibilities; (*travel; success means enabling others to succeed*)
 - Talk to faculty and your advisor; ask them about their job
- Is it right for you?
 - Self-evaluation of what you like and dislike
 - You don’t have to decide right away; keep options open
 - Like any job: you have to love it to be successful



My first three PhD students

PPG (2000-2002);
General Chemical
State Lab, Greece
(2004-present)



Loukas Kioupis

Mike Macedonia Yiannis Kaznessis

Professor, Chemical
Engineering, Univ. of
Minnesota (2001-
2017);
CEO, AgThero (2017-)

Analyst, CNA Corp.
(2000-2006); National
Center for Defense
Robotics + consulting
(2007-2011);
founder, CEO
Veracity Forecasting
(2011-2019); retired
and consulting

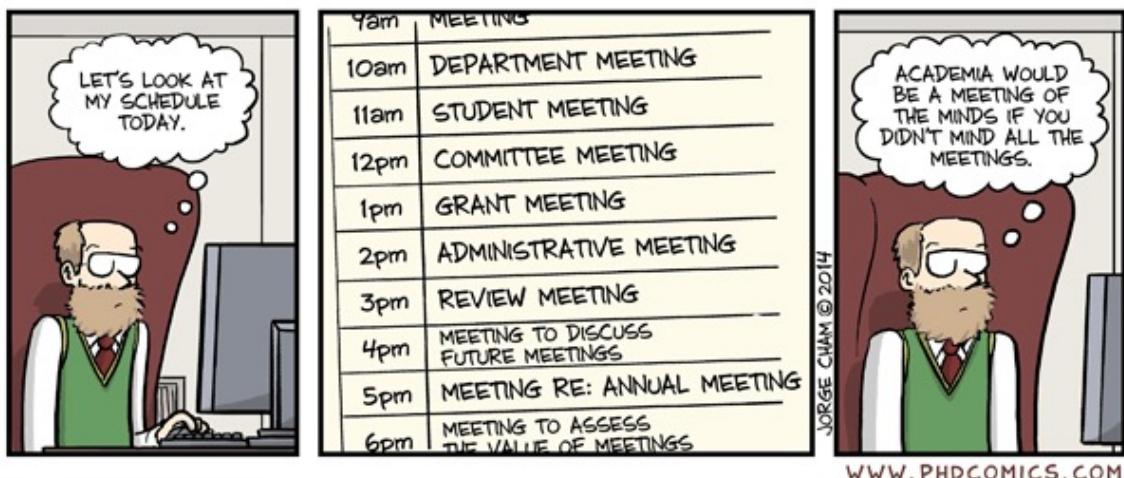
Stereotypes and caricatures



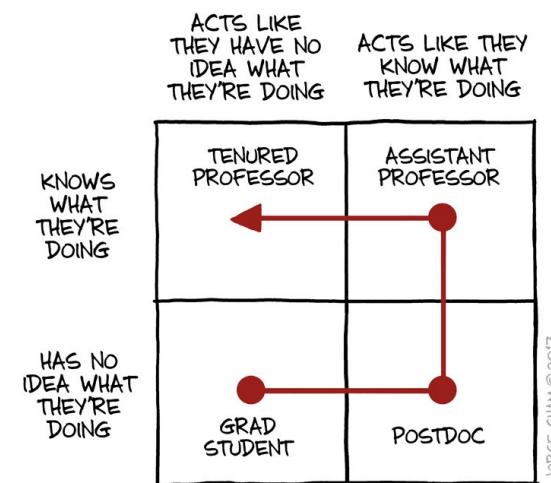
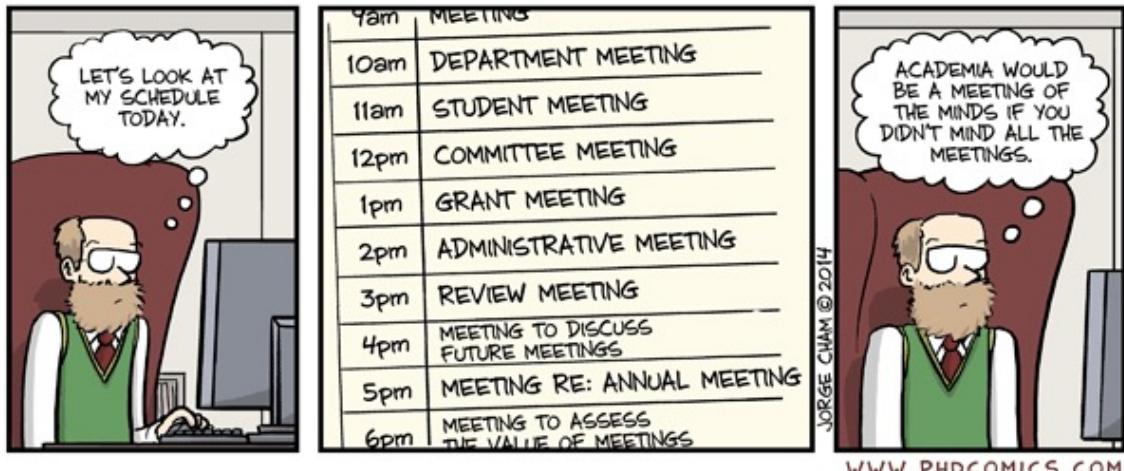
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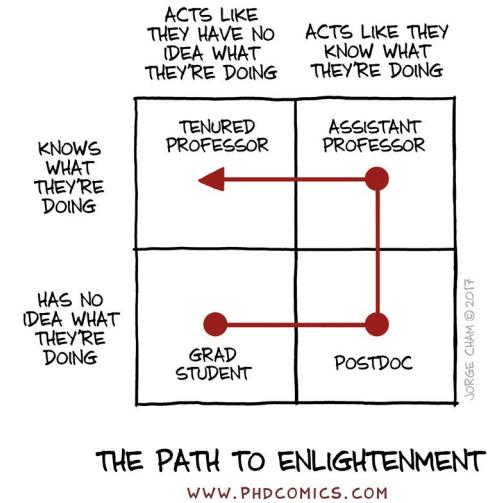
Stereotypes and caricatures



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2. What should you be doing in graduate school?

- Discernment!
- Tell your advisor about your interests; they are here to help
 - Internships
 - Industry for the summer? Do I like that environment?
 - Visiting other labs/collaborators
 - Conferences (smaller, discipline specific)
 - Learn who is who
 - Get known by others
 - Postdoc opportunities
- Apply for fellowships and grants
 - Burnish your CV
 - Unique research opportunities



What else should you be doing in graduate school?

- Publish
 - Quality over quantity: good disciplinary journals
 - You do not need to have all of your papers (or any!) in *Science or Nature*
 - Strong PhD grads will have 4+ first author papers, and maybe 8+ total
- Mix of projects
 - No more than 50% are low risk, high chance of success
 - No less than 50% are high risk, high reward; *impact – what you are known for*
- Become an expert in your sub-discipline; knowledgeable in 1-2 others
 - Versatility and adaptability
 - Know the literature



What else should you be doing in graduate school?

- Be professional
 - Show up prepared for meetings with your advisor
 - *Exceed expectations*
 - Offer to mentor undergraduate researchers early on
 - Offer to mentor new grad students later on
 - Propose ideas to your advisor; show imagination and creativity
 - Become a strong writer and speaker
 - Offer to help with grant proposal preparation
- Teach
 - Do a good job as a TA
 - Try to gain experience as a graduate student instructor
 - Do I like this?
 - Helps with your CV



Postdoc

- Many of you will do a postdoc (almost essential for academic + national lab jobs)
 - It is possible to interview after your PhD; start after 1-2 yr postdoc...
 - Most people interview as a postdoc
- Ask your advisor for help in identifying a good postdoc
 - You want to learn new things
 - Postdoc advisor wants someone with experience
 - Ideal postdoc overlaps with current area but offers chance for growth
 - Is the advisor a good mentor? Have they placed others in academia?
- How to apply
 - Respond to ads
 - *Targeted* emails to key faculty
 - Ask faculty to forward you info on openings
 - Talk to people at conferences



Postdoc application

- Cover letter
 - Who you are (current position, what you work on)
 - Interested in working as a postdoc
 - Some specifics about the work done in that lab, what you hope to do
- CV
 - Academic form: education, positions, awards and honors, conferences, papers
 - Can be multiple pages
- References
 - Three people who know you well
 - At least two are faculty (ideally all three)
 - Ask them for permission first; give them your CV
- Statement
 - 1-2 page summary of your accomplishments, skills, etc.



3. What do departments do?

- Faculty openings are treated like gold
 - Fixed number in college or university; departments fight for them
 - Approved by dean or provost
 - Salary (\$4M) + startup (>\$1M) + space (\$100K – \$1M+)
- Once approval is given to department to search...
 - Decide on rank, research area
 - Write position description
 - Sometimes open, sometimes targeting a specific area
 - Form search committee, often chaired by department chair
- Timing
 - Ads go out in summer or early fall
 - Viable candidate list established prior to AIChE meeting
 - AIChE meeting used to develop short list
 - Phone/virtual interviews in December
 - Visits in January-February; offers follow (March-April); start in August!



What else do departments do?

- Search Committee
 - 3-4 faculty
 - Review all applications (~200+); pare down to top 20 or so
 - Faculty members given a list of names
 - Attend AIChE talks; Meet the Faculty posters; meet for coffee
 - Perform Zoom calls
- Short list
 - Developed in full faculty meeting
 - Invite 3-6 people to campus
 - Research seminar, “chalk talk”, personal meetings, dinners
- Offer
 - Vote by faculty, approved by Dean
 - You provide startup needs; negotiate with department chair
 - 2nd visit to campus if given offer (they are selling themselves to you)



What are they looking for?

- Can you build a world-class research program?
 - Past performance (publications, letters, awards)
 - Research proposal; new ideas, feasible, good fit for department
 - Ability to clearly describe your plans, defend your ideas
 - Enthusiasm and energy
 - Exciting and fundable research area with future growth potential
- Will you be a good teacher?
 - Clear research talk addressed to multiple levels
 - Answer questions clearly and confidently
 - Enthusiasm for teaching; ideas for a new course
 - Experience teaching
 - Versatility (can you cover multiple courses?)
- Do they want you as a colleague?
 - Positive attitude
 - Express interest in what others do
 - Collaborative nature



4. The Process

- Make sure you have one or more talks at AIChE
 - Abstract submission May!
 - Faculty candidate poster session
 - Some divisions have faculty candidate oral sessions
- Apply at least 1 month before AIChE
 - Schools that are formally hiring
 - Email packet to department chair if they do not have an ad
- Attend entire AIChE meeting
 - Faculty candidate poster session is on Sunday
 - Interested departments will show up to your talk: give a good one!
 - You may be asked to meet faculty for coffee, lunch
 - Go to departmental receptions if invited
- Follow up any meetings with a thank you email; express interest



Application packet (generally asked for)

- Cover letter – list your AIChE talks (session, date, time)
- Academic CV
- Research description: 2-4 pages
 - Describe what you did in your PhD and postdoc; key findings of papers, major advances
- Research proposal: 2-4 project ideas you will work on your first 5 years
 - ~2 pages for each
 - Motivation, approach, expected outcomes, potential funding sources
- Teaching statement: 1-2 pages
 - General thoughts on teaching; demonstrate your enthusiasm; call out experience
 - Classes you are comfortable teaching (the more the better; list by course number)
 - Describe 1-2 courses you would like to develop (make sure they do not already exist)
- Diversity statement: (1-2 pages)
 - Past experiences and activities; future plans to advance DE&I

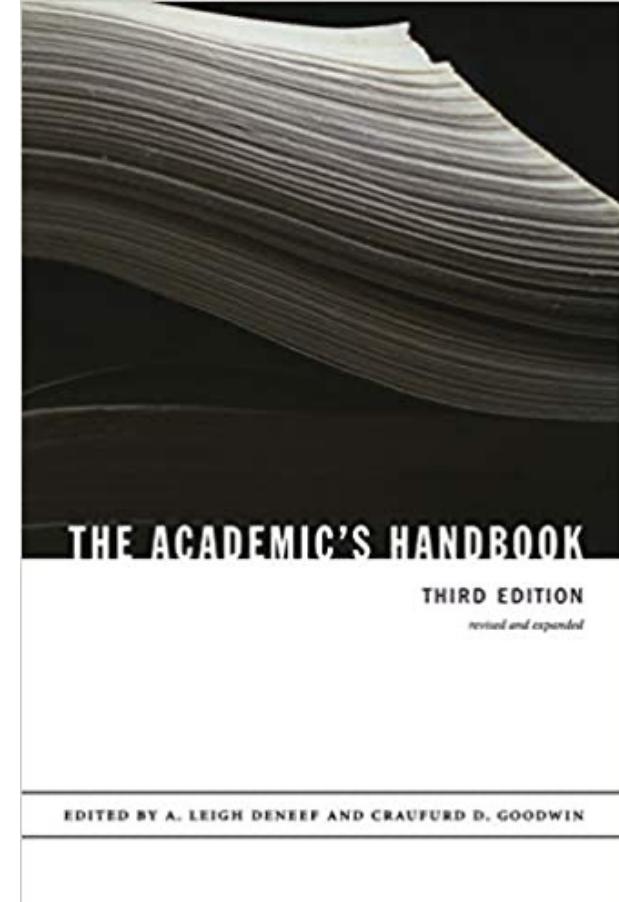
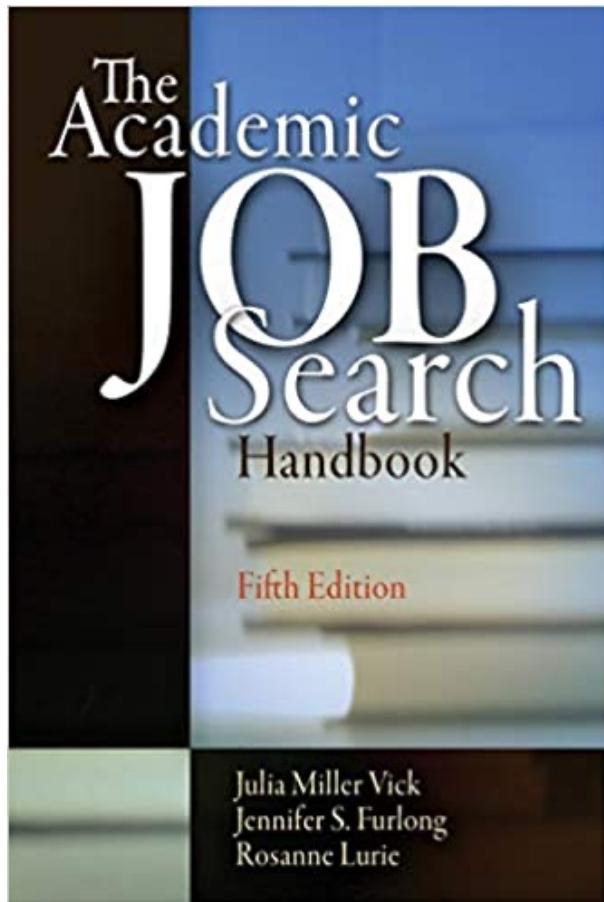
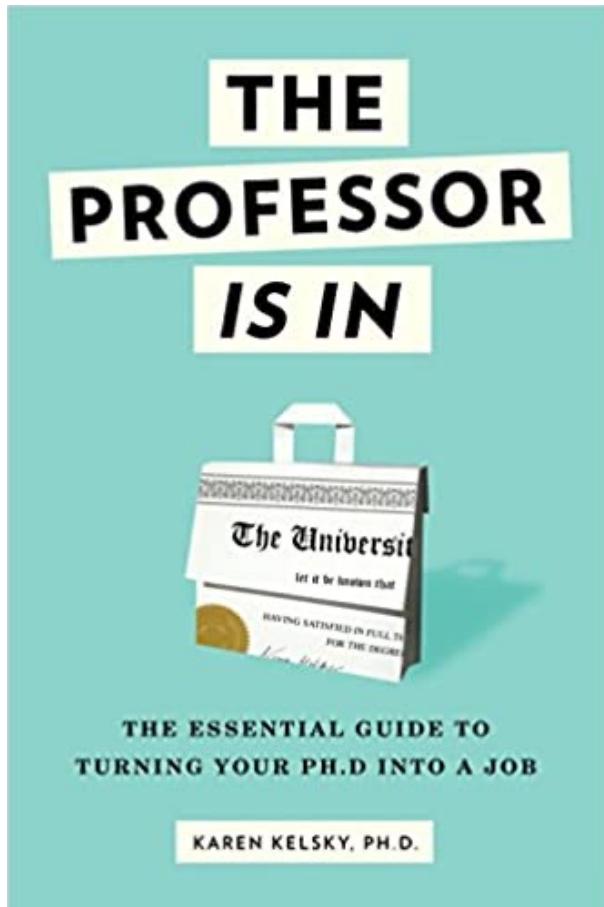


How to prepare

- Start working on research proposal no later than May
 - Ask for feedback from trusted mentors, group members
 - Iterate!
- Talk to faculty (current & former department chairs; junior faculty)
 - Different perspectives!
- Ask for example application packets from faculty hired in the past 6 years
- Have first draft of packet done by July 1
 - Plan on 2 months to refine it
- Get critical feedback
 - Avoid “yep, looks good” people
 - Target mentors inside and outside your field



Other resources



Questions and discussion

