Opportunities and responsibilities in the PRS-Group and beyond

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please read and comply
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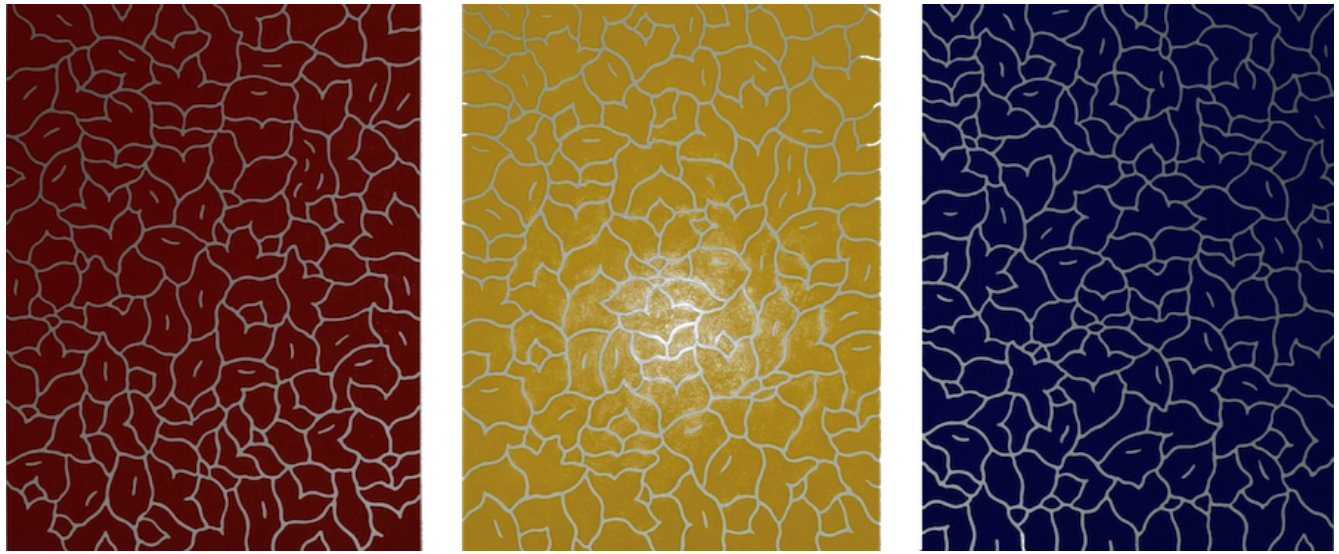
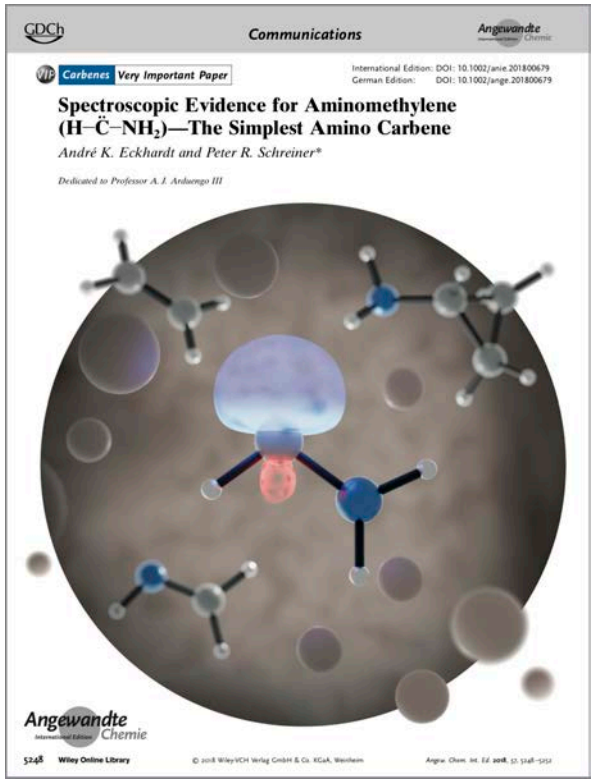
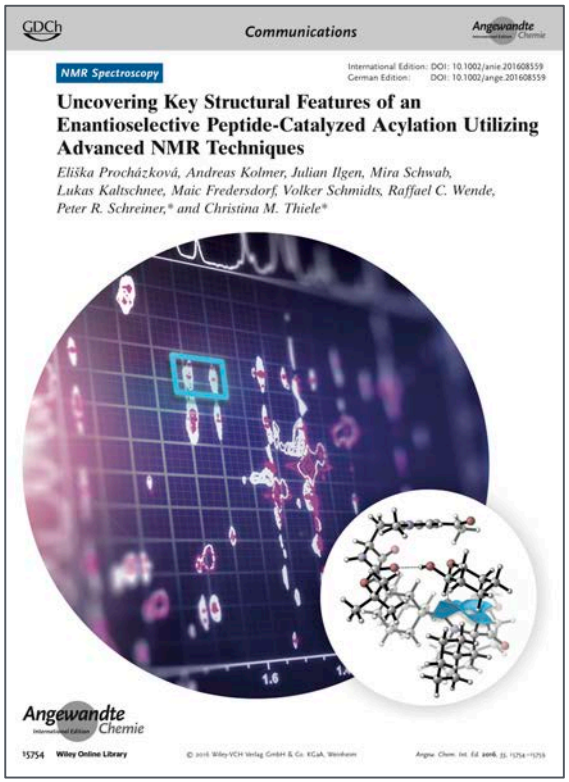


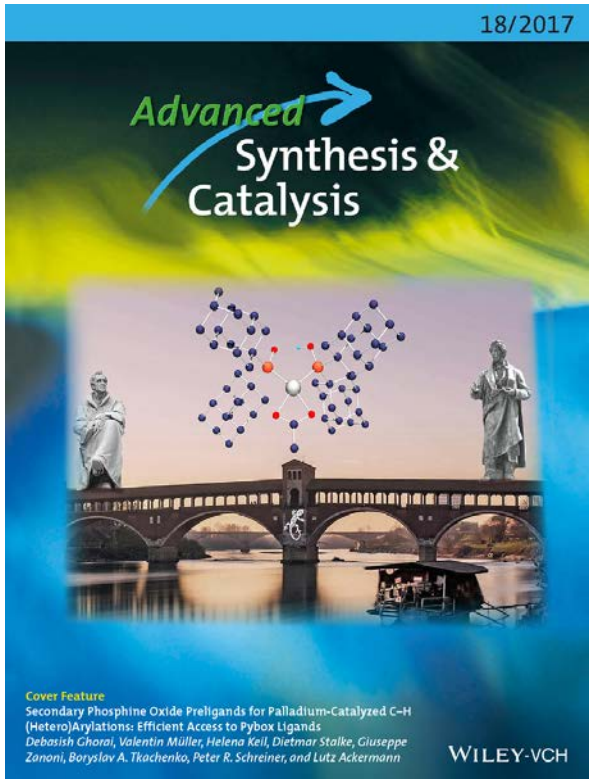
Contemporary physical-organic chemistry



Chemical Concepts & Reactive Intermediates



Organocatalysis



Nanodiamonds

- As you have your project and lab space assigned, **talk** to everybody in the group and introduce your project
- Get to know the lab and make sure everything you need is there **and** fully functional. A **standard setup** includes argon/vacuum line, pump, rotavap (share), glassware, stirrers, etc. and will be replenished if needed.
- Visit Frau Krekel about your **paperwork**, key card, internet access (see "*check in*" form)
- Introduce yourself to the **key staff** managing the various centralized lab facilities: NMR (Dr. Hausmann), Analytics (Dr. Wende), Matrix and Computing (Dr. Gerbig), Praktikum (Dr. Neudert)
- Get a **group job** assigned. Ask for it, don't be prompted.

- There's **only one chance** to make a first impression
- Gain the trust if your supervisor and your colleagues. Remember: the best new projects are given to the most trusted coworkers.
- Get going with your project, don't think there's plenty of time. There isn't.
- **Participate in group activities from mandatory to voluntary.** Be a "good group citizen."
- Be respectful to senior group members, they are good sources for advice.
- Don't go on vacation shortly after joining the group. You wouldn't and couldn't do this in industry either.

- Take care of **your** page, at least once per quarter
- Have a **complete and informative** page; employers and head hunters will check
- If you find mistakes (yours or somebody elses), correct them Frau Krekel will help.
- Keep group **seminars** updated
- Help us **expand the web pages** for internal use, e.g., *white pages, must-read papers, templates, useful links, physical quantities (pKa's, BDEs, etc.)*

Remember Kant's categoric imperative:

"Handle nur nach derjenigen Maxime, durch die du zugleich wollen kannst, daß sie ein allgemeines Gesetz werde."

"Act only according to that maxim whereby you can, at the same time, will that it should become a universal law."

- Your employment as a laboratory assistant **has nothing to do** with your scientific work!
- Be prepared to **work hard**. Science is not a 9–5 job. There's no 38.5 hour week, unless you think you are a genious…
- Take vacation sensibly, **not** when important things are going on!
- Before you go on vacation, make sure your collaborators and I have everything to continue working on our mutual projects (spectra, SI, etc…), especially when a paper is submitted.
- Tell your lab mates when you are physically **back in the lab**

Activity drives discovery.

- Provide a **progress report** every three months. The report dates are **the last working day in a quarter**.
- The easiest type of report is a forthcoming paper. The report should be parts of a forthcoming paper or thesis (which is essentially the same). Make copious use of graphics (ACS chemdraw style!), charts, figures, and tables. Include the literature and text blocks.
- Pick up where you left from your last report. Write an **outlook** what you're doing in the next three months and start with this outlook in your new report and describe what you have accomplished.
- Deposit your report (pdf) on our groups shared JLUbox (https://jlubox.uni-giessen.de)
- There will be **no reminder** (and no excuses!).

- Develop a **daily routine**
- Have a realistic "**to do" list** and strive to achieve it. Set a goal for the day and check in the evening how you faired.
- Avoid the usual distractions such as facebook (non-group), twitter, chats, phone calls, people, SMSing or WhatsApping. **Don't let people steal your time**. Don't steal their's either.

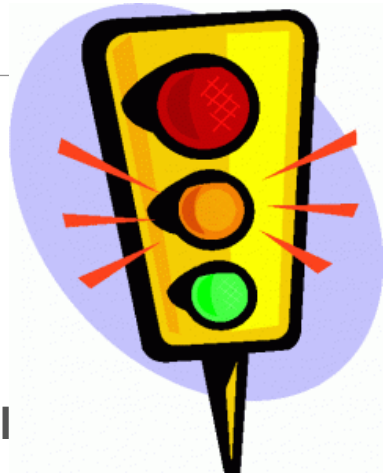
- **Label everything** with a sensible system (understandable by another person) through your lab book including NMR spectra etc.
- Use a **hard-copy lab book** with numbered pages and no empty spaces.
- The **lab book stays in the lab at all times**. Ask me for permission if you need to take it outside. It belongs to the group leader.
- Take notes immediately and in a way so the experiments can be reproduced.
- The same applies to computational work. Use excel to collect data summaries.
- Always assume new compounds are unstable. Keep them cool and in the dark.
- Don’t generate chemical graveyards like dark lab corners or refrigerators.
- Prepare a small-vial collection of all your new compounds you’ve made during your work. Turn this collection in (to me) with your thesis (Referenzverbindungen).

Keep your work space and the entire lab **clean**

Compare this to your work space (I do!) and make sure it is not a mess.

THIS IS UNSAFE!

…and this leaves a bad impression on students and visitors!



- Your are responsible for the cleanliness and safety **your hood** and **the entire l**
- I will regularly check cleanliness and will provide indications when things are getting out of hands with yellow and red stickers. The default is **green** (which is not shown).
- Should you find a **yellow** one, clean up and it will disappear by itself if I am under the impression you have done so.
- If you find a **red** one: see me immediately.
- Repeat offenders will be removed from the lab for a penalty period.

As of today, there will be a **Safety Officer** who will remind you of unsafe practices:
Dr. Raffael Wende.

He has my proxy to act on my behalf.

Required characterizations of chemical compounds in reports and papers

- Molecular formula, calculated exact mass
- HRMS, calculated and measured
- Elemental analysis (there are few exceptions)
- ^{1}H NMR spectrum; give solvent and field strength. Use sensible (!) and common concentrations
- ^{13}C NMR spectrum; give solvent and field strength. Use sensible (!) and common concentrations
- Heteronuclear NMR spectra, if applicable but in any event with F, P, Si, B compounds.
- Multidimensional NMR spectra where applicable
- IR with intensities (!)
- UV/Vis, fluorescence (if your compound allows)
- Optical rotation for chiral compounds; stereochemical assignment
- X-ray single crystal structure (the most convincing proof of structure!)

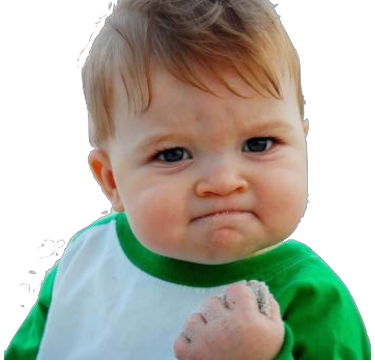
- You should have a **desire to teach**. Remember: you truly understand something if you can teach it to somebody else!
- Identify and recruit **excellent** students from the teaching labs for our group for BSc, MSc, Vertiefung, Spezialisierung etc.
- Don’t interrupt research fully while you’re caught up with teaching duties
- If you take an “Azubi”, set high standards from day one. You need to invest time and effort but the return is in your favor.

- **Semester times** are announced way ahead of time, be prepared for the usual teaching duties, proctoring, grading
- **BSc and MSc students** typically flock in during the summer
- **Liebig College** also takes place in the **summer**: students and visiting professors are here
- Late July-September: group's **summer outing(s)**: excursion, workshop, waterskiing… **Organizing volunteers much appreciated!** My duty is to make it affordable for all.
- Mid-December: **Christmas party**

- Excursion? **Volunteers?**
- Other things to do as a group (potluck dinner, sports activities,…)? **Volunteers?**

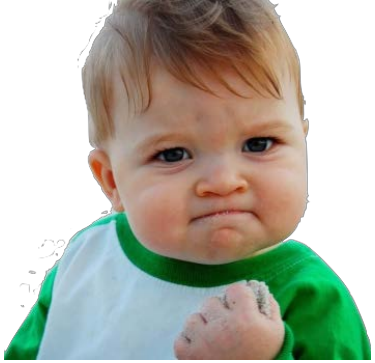
- Regular work hours start at 7:30 in the morning. Of course, I'm not policing the work hours, as long as the results are good. But: "von nichts kommt nichts" also applies.
- Tuesday 5 pm: Chemistry Colloquium - participation **mandatory** (I do ask questions in disputations relating to the colloquia).
- Synthesis seminar (?)
- Friday 8:30–10 am: Group meeting (**also** when I am not there!)
- Irregular but frequent: **Subgroup meetings**

Maximize your chances for success



- Run at least one experiment a day; if you **organize** yourself well, you can manage more
- Immediately do all the **analytics** so you don't pile them up
- For new compounds, run NMRs of starting materials and the **crude reaction mixture** (!)
- Make sure all spectra are **completely assigned**. Don't just look for what you hope to find
- Keep your **authentic samples** and records pristine so I can see them any time
- **Know the literature** for a specific experiment
- Always search for uses / properties of the compounds (and similar ones) in the common databases, including **SciFinder, Organic Synthesis, Houben-Weyl** etc. (not just one!)

Maximize your chances for success



- **Think** about what you're doing **all the time.**
- **Strive to learn** from other people. **Talk** about your experiments.
- Don't talk yourself out of running an experiment. **Just do it.**
- Maintain a positive attitude. **Don't whine**.
- Be a role model. Are people **not** coming to you to ask for advice? Then you should think about your exo-perception.

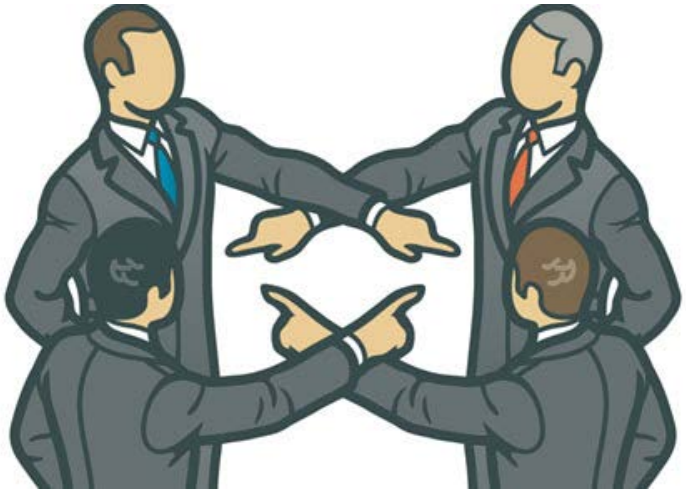
- Clean your work space; prepare yourself for a **better day**
- Avoid spreading your bad mood – nothing good can be expected in return!
- Sometimes it is necessary to change your project. **The difference between persistence and stubbornness is success.**
- Don’t give up easily. Science is character forming (that is why chemistry employers want to hire personnel with doctoral degrees and not MSc graduates!).
- Your creativity, development of ideas, cleverness, and persistence will be the major criteria for evaluating your work.
- **Luck is an extensive quantity**: the more you try, the luckier you are.

- **Lack of commitment.** If you are not committed to science, it is better for yourself and the group to pursue other career options. You should realize this sooner rather than later.
- **Cheating, fabricating results.** Scientific fraud usually starts with a minor dishonesty that requires more lies to back it until it blows up beyond control.
- **Unsafe or exceedingly messy work habits.** Chemistry is dangerous. It is essential that we can trust each other with safety.

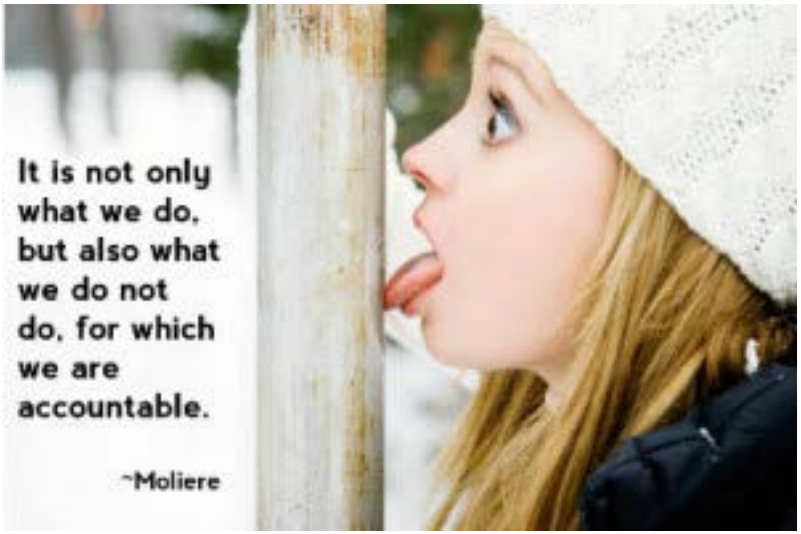
- Be a **volunteer** - this will not go unnoticed
- Be **proactive**, don't wait for somebody else to do the job.
- Be **accountable**: when you take over a duty, identify yourself with it.
- **Just do it.** Take care of things.

Raffi is organizing and overviewing group duties -
he will also remind you if things get out of hands.

- Safety
- Group seminar
- Synthesis seminar
- Linux/Unix computers
- Printers
- Chemical waste
- GC/MS instruments and related
- Dry solvents: stills, cylinder system, extras
- Freeze-dryer



- Synthesis robot
- HPLCs
- Polarimetry
- Fluorescence
- IR
- ESI-MS
- Modeling software
- Web pages

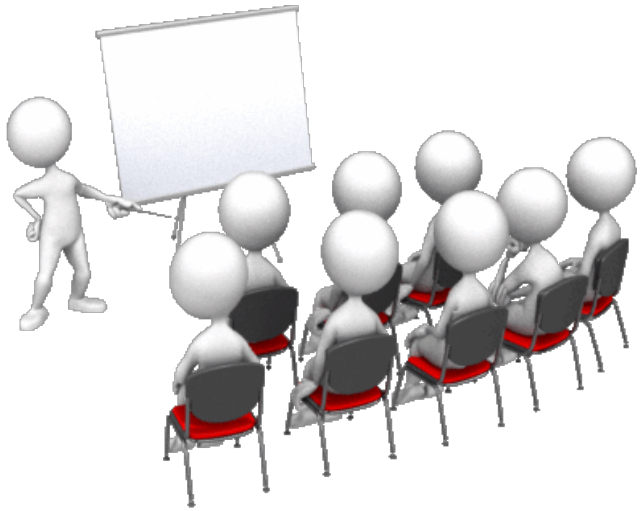


- Social room / kitchen / refrigerator etc.
- Coffee machine
- Pumps
- Dishwasher
- Chemical microwave
- CLAKS, chemical inventory
- Ordering chemicals; free chemicals (via FCI!)
- Chromatography materials (e.g., silica gel)
- Social functions

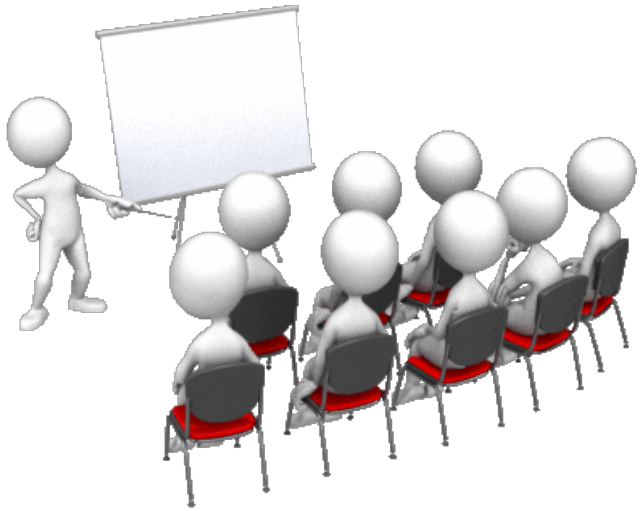
- Dedicated to **progress in research** of every group member
- Platform for announcement and exchanges, **housekeeping**
- **Attendance**, active **participation** (ask questions, teach the others something…) and **punctuality** is mandatory – even when I am not present (don't think this goes unnoticed)
- There are specialized sub-group meetings - anybody can attend

- Use the group's **templates** for seminars, posters, and ChemDraw: build identity
- Schedule ahead of time with the person in charge of group seminars
- Give the seminar organizer a **pdf of your presentation** for our web pages **immediately** after your talk
- Have **top-quality slides**: legibility, font sizes, professional drawings
- Don't copy & paste chemical drawings from other papers

- What is my audience?
- How do I stand? Where do I stand?
- What do I say? How do I say it?
- How do I reduce 100 pages of data into a 30-minute story that makes sense and that “gets it all in?”
- Where do I begin, and how?
- How do I end my talk?
- What should I do with my hands?
- How do I conquer nervousness once and for all?
- How do I translate complicated material, such as a spreadsheet, to a PowerPoint slide so that it communicates instead of bores?



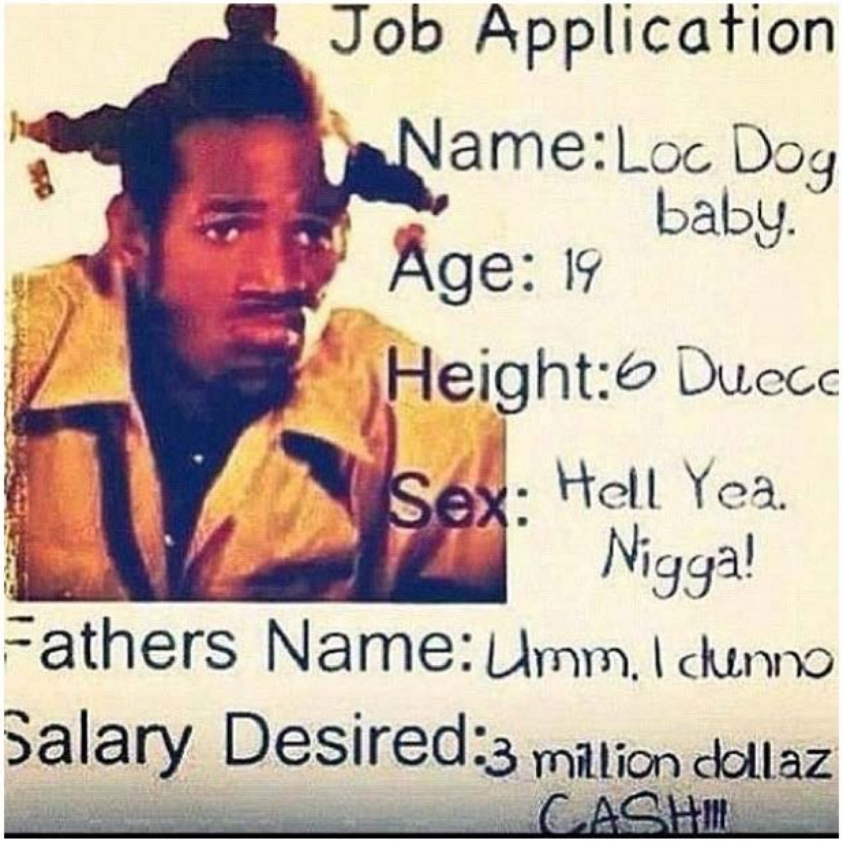
- Suggest this to me (but not if you are not attending in-house colloquia!)
- Be prepared that I will suggest this to you
- You are the **representative of the entire group**
- Tell me / us what you have learned at the conference: give me a report
- Use our group's templates



- See my separate handout on "**Scientific Writing**"
- Attend and participate in my course on Scientific Writing at least once
- Read Strunk and Whites' "**The Elements of Style**" - I'll gave it to you to read. If you don't have it, ask me.

- Always send me your Word file, ChemDraws separately (so I can edit them) and your Endnote library (without papers)
- Switch off “instant formatting” in Endnote before you send it to me
- Use journal type ChemDraw settings (ACS, Wiley, Thieme, RSC…) with fixed lengths and angles
- Label everything in figures
- Prepare vector graphics wherever you can
- Picture quality: at least 150, better 300 dpi
- Use a journal template

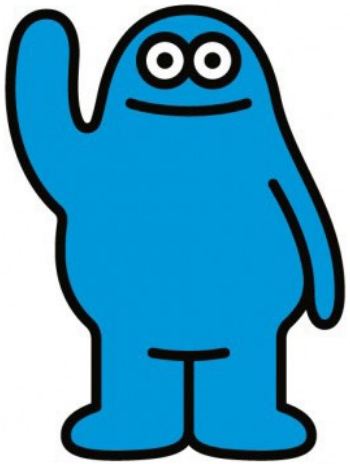
- When you apply for a job, ask me to comment your “portfolio”
- Tell me were you’ve applied because in most instances future employers call me if things are getting serious. I don’t want to sound suprised on the phone.
- I will not compromise the high quality of our group my being dishonest about a co-workers professional preparation, knowledge, team spirit, persistence, accountability, communication skills etc.
- Meet potential company or university representatives at seminars, conferences etc.
- Attend job fairs (e.g., Achema, Dechema, GDCh-Meetings etc.)
- Stay in touch with the group; leave your latest coordinates



- Talking yourselves out of doing an experiment
- Incomplete compound assignments
- Missing mass balances of new reactions
- Messy lab space
- Destroyed pumps
- Unlabeled chemicals
- Claims that are not backed up by data
- Ideas without checking the literature first
- Spelling errors

- Accountability
- Commitment
- Courage
- Creativity
- Curiosity
- Organization
- Passion
- Patience

- Fill out the checkout sheet (Laufzettel)
- Turn in your final report or thesis in hard copy, on CD or USB-stick that contains your NMR FIDs (not spectra!), .doc, .pdf of your thesis, all ChemDraw files separately, your Endnote library in original format
- Hand over compounds to successors and a tray with original samples of all new compounds to me
- Clean everything in your area and in areas you've used
- Leave your lab notebooks with me
- Schedule an exit talk
- Provide a (permanent) forwarding address to Frau Krekel
- Change your mail from regular to "alumni" with the HRZ



Es passiert nichts Gutes, außer, man tut es.