

Introduction to Research and Development in Germany: Structure, Funding, and Careers in Materials Science

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- **Research organisations**
- **Funding agencies and opportunities**
- **Careers**



- **Universities**
- **Max-Planck-Society (MPG)**
- **Fraunhofer-Society (FhG)**
- **Helmholtz-Society (HGF)**
- **Leibniz-Society (WGL)**
- **Ressort research**
- **Industry Labs**



- **Universities: Unity of Education and Research; mainly public, i.e. state funded (by the local states, i.e. Länder). Universities open to the public at minimal tuition fees; current issues: increasing relevance of third party funds; Exzellenzinitiative; basic budget low; high number of students and increasing teaching load; transition between Diplom / Master and English / German mixed; large institutes and few Professors; ‚boolean‘ careers**
- **Max-Planck-Society (MPG): basic science: in average budget funded 82% (GWK: 50% federal + 50 % all states) (does NOT apply to MPIE); evaluation; non-permanent; dynamics of new and closed institutes**
- **Helmholtz-Society (HGF): Mainly public budget: 90% federal + 10% local state (Sitzland); basic research of large society tasks; former nuclear research centers; operating large infrastructure (synchrotron, neutrons, XFEL, ER-C); long term oriented projects; very large projects**
- **Fraunhofer-Society (FhG). Public budget ca. 40 %; applied research; strong industry links; project oriented; highest budget growth rates**
- **Leibniz-Gemeinschaft (WGL): heterogeneous, former GRD labs,**
- **Ressort-Research: Federal and State Governments have labs for basic government tasks (health, safety, policy)**
- **Industry Labs: find out yourself by visiting; heterogeneous; some top – other flop**



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- **DFG: Normalverfahren, Schwerpunktprogramm, Forschergruppe, Sonderforschungsprogramm, Stipendien (special scholarships) – English / German**
- **BMBF: cross-German joint funding projects between academia and industry funded by federal government – German preferred**
- **ERC: Excellence programm by EU; very high and prestigious funding of an own research group over several years – English**
- **ECSC: European Community for Steel and Coal: cross-EU joint funding projects between academia and industry on steel and related – English**
- **M2I: Dutch programme for joint projects between academia and industry – English**
- **EU-FP-IP: large integrated projects involving up to 50 partners across Europe and sometimes associated states outside EU (e.g. Switzerland) – English**
- **Volkswagen-Stiftung: Programm – oriented funding in certain fields that are regularly defined – English / German**
- **Special young researcher / female programmes: DFG, BMBF, ERC, attract, independent MPI groups, AvH, Emmy Noether,... - search science and orga websites**



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- **Go to conferences and give excellent lectures and listen to excellent lectures (reflect on yourself, critical check with colleagues, ever optimize)**
- **Write good papers (aim high), read good papers**
- **Write review papers**
- **Improve language skills (English, German)**
- **„Invite yourself“ to other labs, give lectures, discuss with other researchers (do not „hide“)**
- **Look for good jobs in other labs ;-(**
- **Build network, see other groups and labs**
- **Depending on research direction: visit companies, build company contacts**
- **Learn to negotiate (you do not get what you deserve but what you negotiate)**
- **When senior, work on more than just one topic (with balance)**
- **Write proposals, get funds**
- **Teach**
- **Apply to awards**
- **Supervise students**
- **Learn investment and project planning**
- **Manage your website (committees read it - as well as: researcher ID; ISI, scopus, Google scholar, Research gate)**
- **Reflect what kind of career you do not want**
- **Salaries limited in research in EU (highest in US and Switzerland)**
- **Science is „life-style“: Work more, know more, expect less, get insight, get freedom, help the planet**



- **Public opening in newspapers (e.g. <http://jobs.zeit.de/> -> Professur) and websites**
 - and/or inofficial search (colloquium lectures)**
 - and/or call suited candidates / draw attention**
 - and/or professional headhunters (not common in Germany)**
 - and/or ask colleagues**
- **After deadline all submitted applications are screened**
check: application (complete , letter – why / what / who / with whom, cv, concept paper, awards, support letters, supervision, lab responsibility, investment responsibility, teaching, earlier positions, broad vs. narrow, lectures, teamwork, project experience, third party funding, company contacts, publication list, boards, community services); depending on opening these aspects can have quite different weights
- **Pre-screening and rough ranking / classification (match to job add, records, funding, match between paper form and reality, gradients) by committee**

Publications, reputation, teamwork, teaching, funding, broad scope, conceptual thinker, leadership qualities



- **Candidate: get / request detailed written info about chair / institute (ongoing funding and contracts, free personell, building state, cleanliness, philosophy, teaching load, equipment, motivation of co-workers,....)**
- **Committee meeting: decide about whom to invite for interview**
- **Interview process: a) scientific lecture (public); b) short teaching (public) example; c) interview: concept for the job: funding, teaching, research, teamwork, competing offers, large projects, investment plans – start-up funds (bring papers for each item and some extra slides: balance of excitement, motivation and committment)**
- **List / ranking e.g. 1....3: negotiations about start-up conditions: start-up investment funds; free positions; ongoing funding and contracts; building state; equipment,..)**

Solid preparation (when u apply, do it 150%); ask experienced people; get as much info about institute as possible



- **BMBF (Bundesministerium für Bildung und Forschung), 2004: Bundesbericht Forschung 2004. Bonn, Berlin: Selbstverlag.**
- **HGF (Helmholz-Gemeinschaft) 2006a: Zahlen, Daten, Fakten**
http://www.helmholtz.de/de/Wir_ueber_uns/Profil/Daten__Zahlen__Fakten.html
- **HGF (Helmholz-Gemeinschaft) 2006b: Profil**
http://www.helmholtz.de/de/Wir_ueber_uns/Profil.html
- **HGF (Helmholz-Gemeinschaft) 2006c: Die Satzung**
http://www.helmholtz.de/de/Wir_ueber_uns/Profil/Satzung.html
- **Leibniz-Gemeinschaft 2004: Zahlen und Fakten 2004**
http://www.leibniz-gemeinschaft.de/extern/organisation/index_4.html
- **Max-Planck-Gesellschaft 2006a: Zahlen und Fakten.**
<http://www.mpg.de/ueberDieGesellschaft/profil/zahlenUndFakten/index.html>,
- **Max-Planck-Gesellschaft 2006b: Aufgabe.**
<http://www.mpg.de/ueberDieGesellschaft/profil/aufgabe/index.html>
- **STÄUDNER, F., 2005: Mehrwert durch Netzwerk. Die Leibniz-Gemeinschaft 2005: Profil, Position, Partner und Perspektiven. Bonn: Selbstverlag der Leibniz-Gemeinschaft.**