



# Academic Research Ecosystem in Germany

Academic career path and Funding opportunities

26. 07. 2025 | Dr. Junbeom Park, Institute of Energy Technologies – Fundamental Electrochemistry (IET-1), FZJ

# Personal research timeline



Bachelor (Chem. Eng.) : 2008.03 – 2012.02  
MS-PhD integrated (Chem. Eng.) : 2012.03 – 2017.08

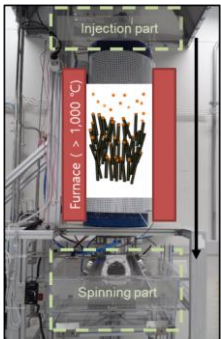


Postdoc. : 2020.03 – 2024.05  
Staff Scientist : 2024.06 - present

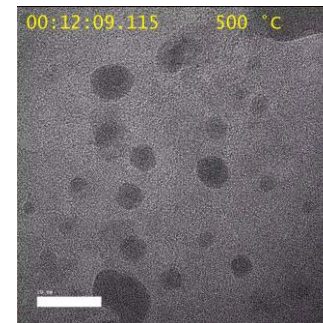
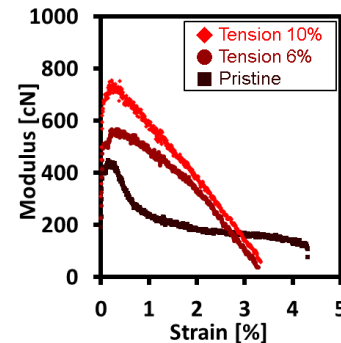


Researcher : 2014.08 – 2018.02  
Postdoc. : 2018.03 – 2020.02

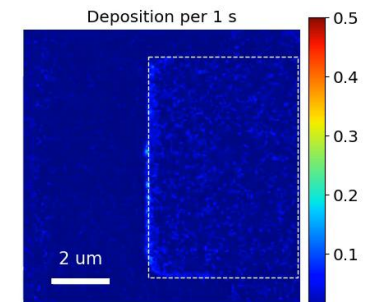
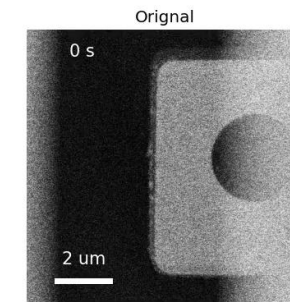
## Carbon nanotube fiber synthesis



## Characterization and In-situ TEM



## In-situ TEM and Data processing



# Why Germany?



**FIVE REASONS WHY**



**1. Germany has great universities and research institutions**  
German universities are considered to be some of the best on the planet. And Germany's industry and public research organisations are among the world leaders in many sectors.



**2. Research is international and interdisciplinary**  
Here you can work with researchers from all over the world on all kinds of projects, including many that are interdisciplinary in nature.



**4. You can do your PhD in English**  
You can write your thesis in English at most faculties.



**3. There are no tuition fees**  
As an international doctoral student, you will not be charged for tuition at public universities.



**5. Life is good in Germany**  
Despite its high quality of life, the cost of living in Germany is comparatively low by international standards.

1. Access to innovative research infrastructure and resources
2. Free and creative development opportunities
3. Generous funding opportunities and a stable R&D policy framework
4. International and interdisciplinary networking
5. Focus on social and ecological responsibility

# Academic degree system

Bachelor's degree

Master's degree

Ph.D degree



4 years  
Full lecture  
Student

2 years  
Lecture & Thesis  
Student

3~4 years  
Lecture & Thesis  
Student



3~4 years  
Full lecture  
Student

1~2 years  
Lecture + Thesis  
Student

3~4 years  
Full research / No lectures  
Worker

# Types of Universities in Germany

## Universities (~100)

DE: Universitäten (Uni)

Freie Universität Berlin  
Universität München  
Universität Heidelberg

Unity of research and teaching  
& Academic freedom

## Universities of Applied Sciences (~170)

DE: Hochschulen für angewandte  
Wissenschaften (HAW)  
or Fachhochschulen (FH)

FH Aachen  
HAW Hamburg  
Frankfurt University of Applied Sciences

Combination of practical science and  
application focused teaching

## Technical Universities (~60)

DE: Technische Universität (TU)  
or Technische Hochschule (TH)

Leibniz Universität Hannover  
Karlsruher Institut für Technologie (KIT)  
Universität Stuttgart

Focus on computer science, technical  
subjects and engineering sciences

# Alliance among universities



Free University of Berlin  
Humboldt University of Berlin  
University of Bonn  
Goethe University of Frankfurt  
University of Freiburg  
University of Göttingen  
University of Hamburg  
Heidelberg University  
University of Cologne  
University of Leipzig  
University of Mainz  
Ludwig Maximilian University of Munich  
University of Münster  
University of Tübingen  
University of Würzburg



Hochschule für Wirtschaft und Recht Berlin  
Hochschule Bremen  
HAW Hamburg  
Technische Hochschule Köln  
FH Münster  
Hochschule München  
Hochschule Osnabrück

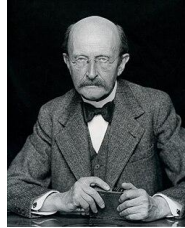


RWTH Aachen  
TU Berlin  
TU Braunschweig  
TU Darmstadt  
TU Dresden  
Leibniz University Hannover  
Karlsruhe Institute of Technology  
TU Munich  
University of Stuttgart

# Non-University Research Institutions in Germany



Founded in 1911



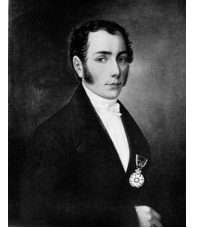
**Max Planck**  
Theoretical physicist  
Entropy  
Black-body radiation  
Quantum mechanics

|               |        |    |
|---------------|--------|----|
| € 2.1 billion | 24,000 | 84 |
|---------------|--------|----|

“To conduct cutting-edge, **fundamental research** for the benefit of all humankind”



**Fraunhofer** Founded in 1949



**Joseph von Fraunhofer**  
Physicist & Optic lens  
manufacturer  
Dark absorption lines  
Optic instruments

|               |        |    |
|---------------|--------|----|
| € 3.6 billion | 32,000 | 75 |
|---------------|--------|----|

“Finding outstanding solutions for **today’s and tomorrow’s markets**”



Founded in 1995



**Hermann von Helmholtz**  
Physicist and Physician  
Mechanics  
Sensory physiology  
Electromagnetism

|               |        |    |
|---------------|--------|----|
| € 5.0 billion | 46,000 | 18 |
|---------------|--------|----|

“To solve **grand challenges** facing society, science and industry”



Founded in 1990



**Gottfried Wilhelm Leibniz**  
Mathematician &  
Philosopher  
Law of continuity  
Calculus

|               |        |    |
|---------------|--------|----|
| € 2.3 billion | 21,000 | 96 |
|---------------|--------|----|

“To make **research-based knowledge** available as a basis for **social discourse and political decision making**”

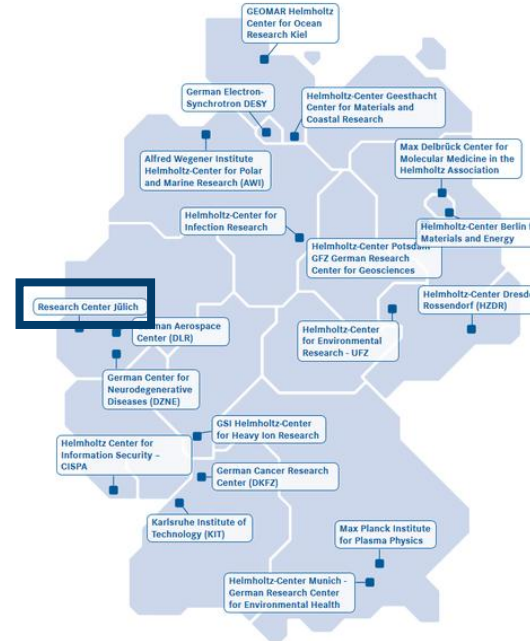
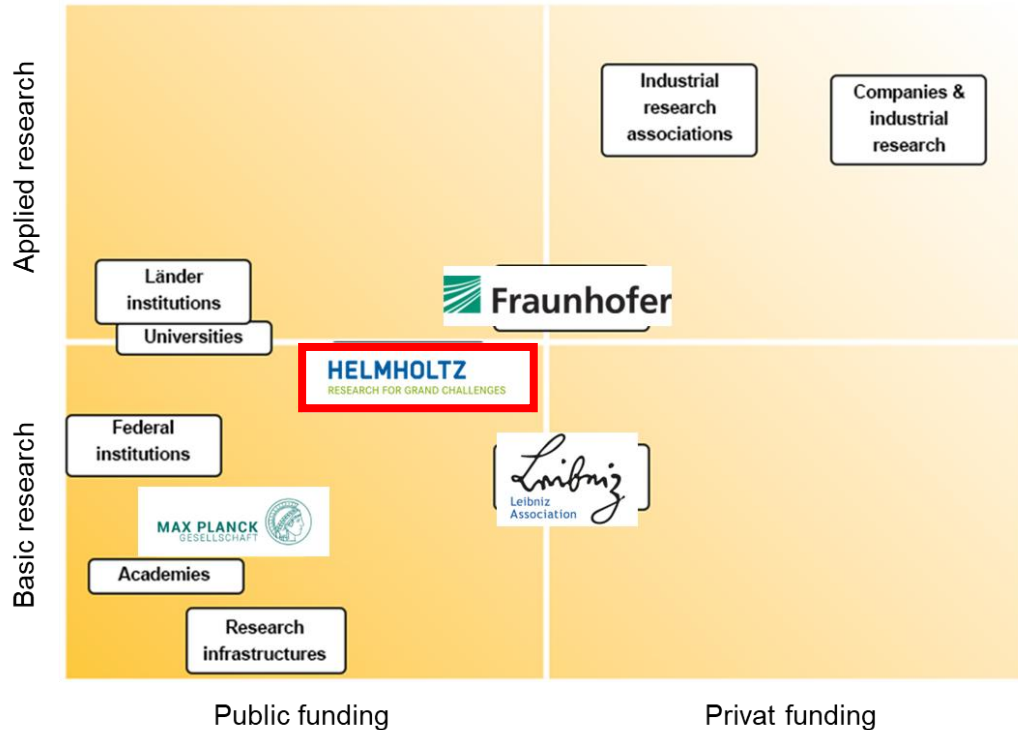
|               |            |              |
|---------------|------------|--------------|
| Annual budget | # Employee | # Institutes |
|---------------|------------|--------------|

Member of the Helmholtz Association

# Non-University Research Institutions in Germany



| Annual budget | € 2.1 billion<br>(₩ 3조 2천억원) | € 3.6 billion<br>(₩ 5조 6천억원) | € 5.0 billion<br>(₩ 7조 9천억원) | € 2.3 billion<br>(₩ 3조 5천억원) | (₩ 4천 5백억원) |
|---------------|------------------------------|------------------------------|------------------------------|------------------------------|-------------|
| # Employee    | 24,000                       | 32,000                       | 46,000                       | 21,000                       | 3000        |
| # Institutes  | 84                           | 75                           | 18                           | 96                           | (NST 23)    |

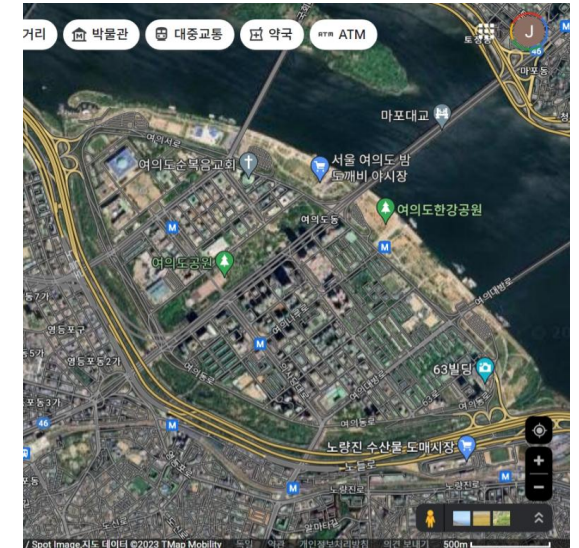
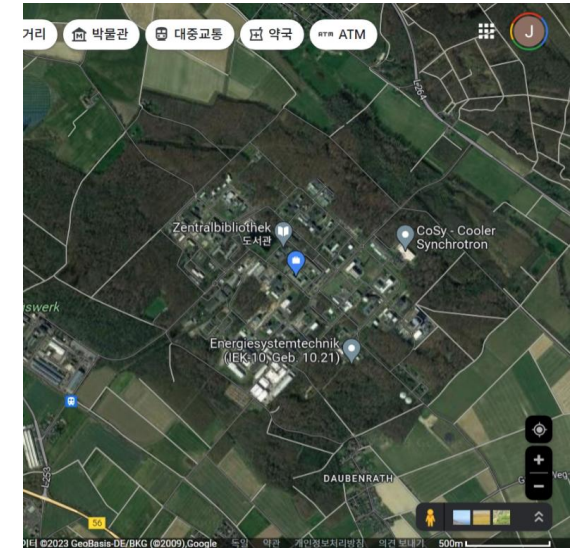
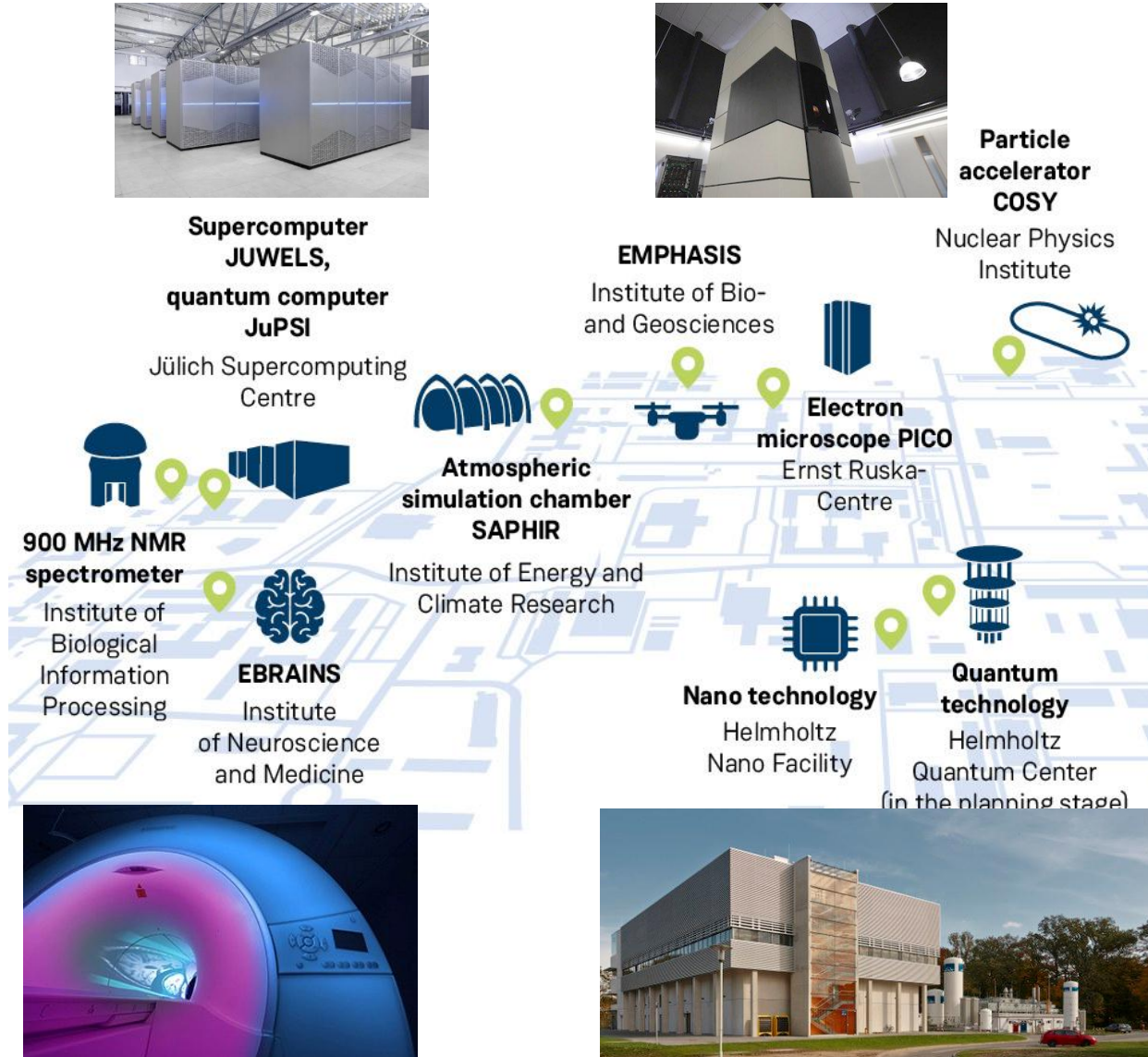


Karlsruhe Institute of Technology (KIT)  
 Juelich Research Center (FZJ)  
 German Aerospace Center (DLR)  
 German Electron Synchrotron (DESY)  
 Helmholtz-Zentrum Berlin (HZB)  
 German Cancer Research Center (DKFZ)  
 ...

# Introduction of FZJ



Member of the Helmholtz Association



# Living cost in Germany

## Examples of Monthly Expenses in Germany

### Example 1



Johan is a 28-year-old graphic designer living in Berlin, earning a monthly gross salary of €4,500. After taxes and social security deductions, his net income amounts to **€2,800 per month**.

Among these deductions, €465.75 is allocated to health and nursing care insurance. Johan lives alone in a spacious one-bedroom apartment near Berlin's city center.

From €2,800 net, here are his monthly expenses:



**Totaling: €2,164 to spend / €636 savings**



Visuals by  
Studying-in-Germany.org



## Examples of Monthly Expenses in Germany

### Example 2



Klara is a 22-year-old bachelor's student living in Aachen. She qualifies for €800 per month in financial support through BAföG. Since she's under 25, Klara is still covered under her parents' statutory health insurance. As for her living arrangement, she pays for her room in a shared apartment (WG) with two other housemates. Money is tight right now, so Klara sticks to a strict budget and takes full advantage of free university activities like sports, parties, and events. She's planning to get a part-time job soon to have a bit more spending money.

From €2,800 net, here are his monthly expenses:



**Totaling: €800 to spend / No savings yet.**



Visuals by  
Studying-in-Germany.org



# Salary scale

One of **PhD Student** offer from FZJ

The position is for a fixed term of **3 years**, with possible long-term prospects. Pay in line with **75% of pay group 13** of the Collective Agreement for the Public Service (TVöD-Bund) and additionally 60 % of a monthly salary as special payment („Christmas bonus“).

(50 ~ 100 % depending on contract)

One of **Postdoc offer** from FZJ

You will be initially employed for a **fixed term of 2 years** with the prospect of longer-term employment. Salary and social security benefits will conform to the provisions of the Collective Agreement for the Public Service (TVöD-Bund), **pay group 13**, depending on your current qualifications and the precise nature of the tasks assigned to you.

cf. General idea of pay group role

Pay group 13: Individual worker

Pay group 14: Group manager

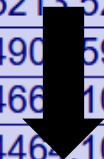
Pay group 15: Chief



Temporary position

Permanent position

| Entgelttabelle TVÖD Bund 2025 |         |         |         |         |         |         |
|-------------------------------|---------|---------|---------|---------|---------|---------|
| €                             | 1       | 2       | 3       | 4       | 5       | 6       |
| E 15Ü                         | 6870.54 | 7601.27 | 8293.50 | 8755.01 | 8862.70 |         |
| E 15                          | 5669.12 | 6039.84 | 6453.36 | 7017.89 | 7598.61 | 7980.65 |
| E 14                          | 5153.96 | 5489.64 | 5928.03 | 6414.51 | 6956.78 | 7346.09 |
| E 13                          | 4767.62 | 5135.53 | 5554.35 | 6009.06 | 6544.14 | 6834.50 |
| E 12                          | 4295.43 | 4718.78 | 5213.52 | 5762.47 | 6406.61 | 6712.24 |
| E 11                          | 4153.35 | 4542.72 | 4900.59 | 5305.54 | 5848.79 | 6154.45 |
| E 10                          | 4012.19 | 4317.28 | 4660.10 | 5040.24 | 5459.10 | 5596.64 |
| E 9c                          | 3869.93 | 4134.21 | 4460.10 | 4823.53 | 5213.22 | 5338.33 |



| E 13           | 1         | 2         | 3         | 4         | 5         | 6         |
|----------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Grundgehalt:   | 4767.62 € | 5135.53 € | 5554.35 € | 6009.06 € | 6544.14 € | 6834.50 € |
| Brutto gesamt: | 4767.62 € | 5135.53 € | 5554.35 € | 6009.06 € | 6544.14 € | 6834.50 € |
| Netto gesamt:  | 2879.34 € | 3056.39 € | 3282.26 € | 3524.90 € | 3801.12 € | 3946.85 € |

|      |         |         |         |         |         |         |
|------|---------|---------|---------|---------|---------|---------|
| E 6  | 3152.04 | 3346.55 | 3482.94 | 3617.92 | 3750.49 | 3819.26 |
| E 5  | 3038.99 | 3227.67 | 3355.11 | 3490.06 | 3615.47 | 3680.28 |
| E 4  | 2912.62 | 3103.55 | 3263.75 | 3363.48 | 3463.20 | 3521.60 |
| E 3  | 2872.69 | 3078.02 | 3127.99 | 3242.21 | 3327.92 | 3406.43 |
| E 2Ü | 2711.60 | 2945.82 | 3031.62 | 3146.03 | 3224.63 | 3283.31 |
| E 2  | 2692.16 | 2894.28 | 2944.67 | 3016.58 | 3174.63 | 3339.97 |
| E 1  |         | 2465.52 | 2498.86 | 2540.55 | 2579.42 | 2679.47 |

# For junior postdocs => Scholarships or Fellowships

Supports your salary + some travel costs

Competition among similar career level



| Program title  | Humboldt Research Fellowship | Walter Benjamin Programme   | Daimler and Benz Foundation's scholarship | Human Frontier Science Program Postdoctoral Fellowships | Marie Skłodowska-Curie Actions Postdoctoral Fellowships |
|----------------|------------------------------|-----------------------------|-------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Target group   | < 4 years after PhD          | Recognised Researchers (R2) | Experienced postdocs                      | < 3 years after PhD                                     | < 8 years after PhD                                     |
| Funding period | 6 – 24 months                | Max. 2 years                | 2 years                                   | 3 years                                                 | 1-2 years                                               |
| Funding scale  | Net € + 2,700 / month        | Gro. € + 5,000 / month      | € 40,000 for 2 years                      | Gro. € + 5,000 / month                                  | Gro. € + 5,000 / month                                  |

# For experienced postdocs => Individual grants

Supports your team member's salary + research performing costs

Competition among similar career level



European Research Council  
Established by the European Commission

| Program title  | Emmy Noether Programme | Helmholtz Investigator Groups | Max Planck Research Groups | Klaus Tschira Boost Fund | ERC Starting Grant      |
|----------------|------------------------|-------------------------------|----------------------------|--------------------------|-------------------------|
| Target group   | < 4 years after PhD    | 2 ~ 6 years after PhD         | < 8 years after PhD        | Experienced postdocs     | 2 ~ 7 years after PhD   |
| Funding period | 6 years                | 5 years                       | 6 + 3 years                | 2 years                  | 5 years                 |
| Funding scale  | About € 1 ~2 M for 6Y  | > € 1.75 M for 5Y             | -                          | € 120,000 for 2 years    | € 1,500,000 for 5 years |

# After postdoc period => Individual grants

## Competition with other established PIs



### Joint Korean-German Research Projects 2025 in the Natural, Life and Engineering Sciences (NRF-DFG 2025)

As an expression of the fruitful scientific collaboration between their two countries, the National Research Foundation of Korea (NRF) and the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) are pleased to announce the launch of the second call for joint Korean-German research proposals in the natural, life and engineering sciences.

This call provides funding for joint research projects carried out between highly qualified researchers in the Republic of Korea and their German counterparts. The joint proposals have to be based on a close interaction and exchange between the Korean and German research teams and should present joint project goals and a joint work plan with balanced contributions from all project partners.

The collaborative projects selected to take part in this joint initiative will receive research funding for a period of three years. The NRF will fund the Korean project components, whilst the DFG will fund the components to be carried out in Germany. Based on written reviews, a joint Korean-German panel will select approximately 20 projects for funding.

#### Specific instructions for applicants from Germany

- It is important to note that there are no separate funds available for these efforts; proposals must succeed on the strengths of their intellectual merit and teams in competition with all other proposals under the "Sachbeihilfe/ Research Grants" funding programme.
- Applicants to be funded by the DFG are required to fulfil the eligibility requirements of DFG research grants. This includes the duty to cooperate ("Kooperationspflicht") within Germany for members of non-university institutions with permanent positions. Any duty to cooperate for DFG applicants at non-university research institutions can only be fulfilled through cooperation with a partner at a German university (DFG form 55.01, see link below) and not with a university in Korea.



### 2025년도 과학기술정보통신부 기초연구사업 신규과제 공모 (개인연구-글로벌 매칭형(독일))

2025년도 과학기술정보통신부 기초연구사업 글로벌 매칭형(독일)  
신규과제 선정지원 계획을 다음과 같이 공고합니다.

2025년 1월 21일

<주무부처> 과학기술정보통신부 장관 유 상 임  
<전문기관> 한국연구재단 이사장 홍 원 화

|                |             |                                 |           |
|----------------|-------------|---------------------------------|-----------|
| 과제 수           | 20개 내외      |                                 |           |
| 과제당 연구비        | 연 150백만원 이내 |                                 |           |
| 기간<br>및<br>연구비 | 총           | 36개월 (2025.12.1. ~ 2028.11.30.) | 450백만원 이내 |
|                | 1차년도        | 12개월 (2025.12.1. ~ 2026.11.30.) | 150백만원 이내 |
|                | 2차년도        | 12개월 (2026.12.1. ~ 2027.11.30.) | 150백만원 이내 |
|                | 3차년도        | 12개월 (2027.12.1. ~ 2028.11.30.) | 150백만원 이내 |

※ 독일 측 지원규모 : 연구수행 내용 및 국제협력 내용 등에 따라 차등 지원, 3년간 지원 예정

○ 지원대상 : 국내대학 이공분야 전임교원 및 국(공)립 정부출연연구소의 정규직 연구원

※ 민간연구소, 대학기술지주회사, 정부기관 소속 연구원은 신청 불가

# After Postdoc period => Consortium grants

## Competition with other established PIs

Hydrogen Flagship Project: Total budget (> 700 million €, 약 1조원)

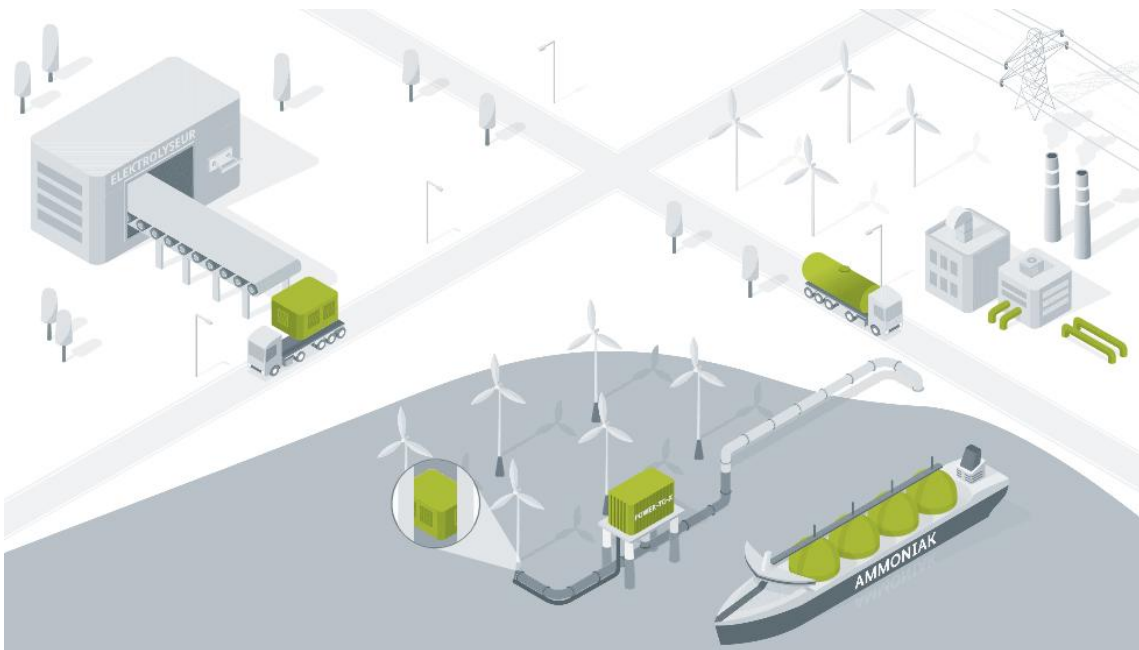


Federal Ministry  
of Education  
and Research

**Hydrogen**  
Flagship Projects  
Green. Great. Global.

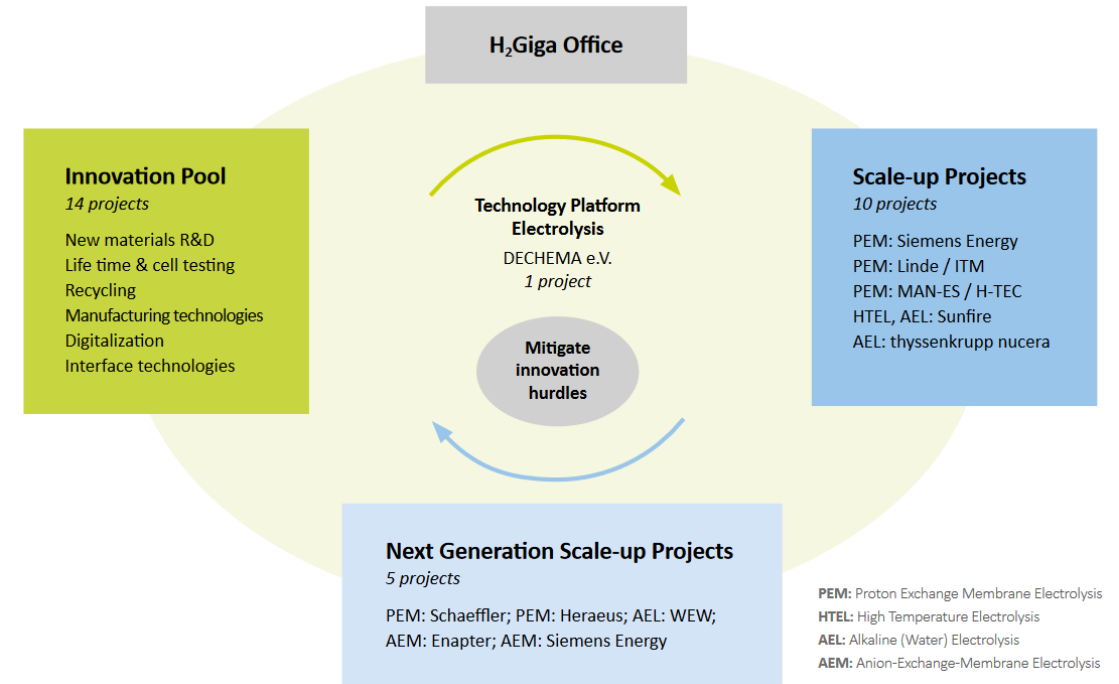
1) H<sub>2</sub>Giga: Series production of H<sub>2</sub>

3) TransHyDE: H<sub>2</sub> transport infrastructure

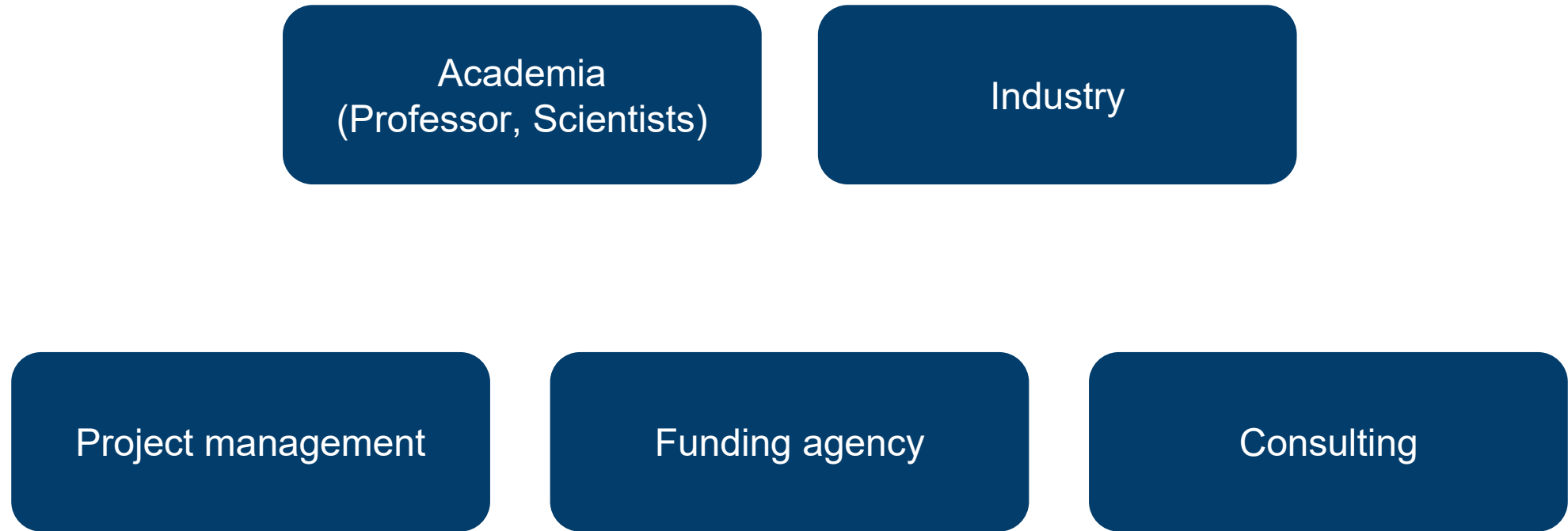


2) H<sub>2</sub>MARE: H<sub>2</sub> Production on the high seas

30 projects among >120 partners



# Wide career path in Germany



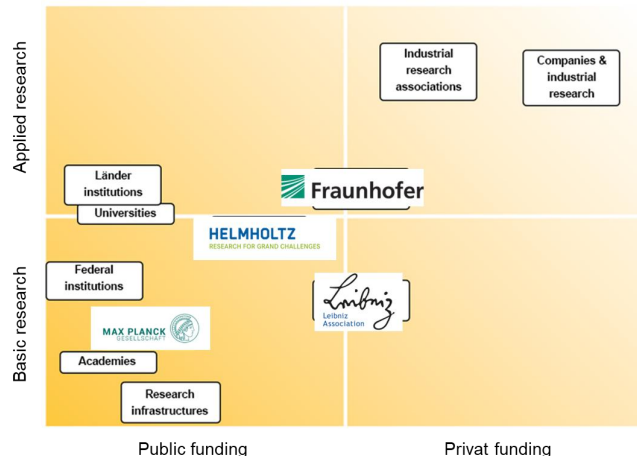
# Summary

- Specialties in Germany: No tuition fee, Innovative research infrastructure and Stable R&D policy
- Universities | Universities of Applied Sciences | Technical Universities
- Non-University Research Institutions in Germany: Max Planck | Fraunhofer | Helmholtz | Leibniz
- Generally, scientist is well-paid job in Germany, even as temporary position.
- Various funding programs depends on career level (junior postdoc, experienced postdoc, after postdoc)

GERMAN **U15**

**UAS7**  
GERMAN UNIVERSITIES OF  
APPLIED SCIENCES

**TU9**  
GERMAN UNIVERSITIES  
OF TECHNOLOGY



Klaus Tschira  
Stiftung



**DFG**

**Daimler and  
Benz Foundation**



**European Research Council**  
Established by the European Commission



**European  
Commission**





# Thanks for your attention

Dr. Junbeom Park (j.park@fz-juelich.de) | <https://go.fzj.de/j.park>  
Institute of Energy Technologies - Fundamental Electrochemistry (IET-1),  
Forschungszentrum Jülich (FZJ), Germany