

## Network partners

The Network **Nanotechnology for more efficiency in geothermal systems** (NanoGeoTherm) was founded in December 2020. It is an association of companies with research facilities and institutions. The network is managed by Nanoinitiative Bayern GmbH. We would like to thank the Federal Ministry for Economic Affairs and Climate Action for funding within the framework of the Central Innovation Programme for SMEs (ZIM).



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## Objectives

- Pooling of partner competencies
- Exchange of information between all partners along value-added chains
- Cooperation in development projects
- Use of nanomaterials for development and improvement of material solutions
- Joint public relations
- Organisation of expert events, status meetings, workshops and seminars
- Strategic expansion of the network

## Become a partner!

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**Nanotechnology  
for more efficiency  
in geothermal systems**





## Network NanoGeoTherm

The use of geothermal energy, especially near-surface geothermal energy, has become more important in recent years as it provides a stable, sustainable, and climate-friendly option to heat and cool buildings, technical facilities, and even entire neighbourhoods.

The development and implementation of new materials is a promising way to increase and control electrical and thermal conductivity, making near-surface systems more efficient. For example, nanomaterials can be used to target electrical and thermal conductivity in plastics and other materials. The constant progress in the further development and mass production of nanomaterials including the consideration of gained knowledge in fields of analytics and occupational and environmental safety makes this class of materials a promising candidate to increase the total efficiency geothermal system.

## Core competencies

- Bring together expertise from geothermal energy and nanotechnology
- Produce and characterise nanomaterials
- Apply different dispersion techniques
- Perform ecotoxicological studies
- Summarise geotechnical services from subsoil investigations to installation of a geothermal system
- Planning and executing boreholes
- Develop and produce geothermal probes and backfill materials

## Your contact to the network



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## Development lines

### 1. Increasing the electrical and thermal conductivity of plastic components

for optimised heat transport through conductive geothermal probes.

### 2. Optimisation of backfill materials

for better conductivity and thermal coupling between pipe and filling material.

### 3. Improvement of the heat transfer fluids

for increased heat absorption.

### 4. Ecotoxicological investigations

for a verified safe use of nanomaterials.

### 5. New Simulation methods

for the planning of complex construction projects.