

# PD Dr. habil. Nadja Ray

## CURRICULUM VITAE

### PERSONAL DATA

Date/place of birth: 11.09.1983, Erlangen, Germany  
Nationality: German  
Marital status: married, two children (2013, 2017)

### EDUCATION

#### Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)

06/2016 - 07/2020

Habilitation in Applied Mathematics

12/2008 - 05/2013

Dissertation in Applied Mathematics (Summa cum laude)

10/2002 - 03/2008

Diploma in Mathematics with minor Theoretical Physics  
(with Distinction)

#### Emmy-Noether-Gymnasium, Erlangen — *Abitur*

09/1993 - 06/2002

grammar school (Abitur: A-Levels, GPA 1.1)

### WORK EXPERIENCE

#### Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)

04/2020 - present

DFG temporary position for principal investigators

01/2020 - present

Head of junior research group status

10/2012 - 03/2020

Research associate at Chair of Applied Mathematics I

10/2012 - 03/2017

DFG RTG 1773 coordinator at Chair of Computer Graphics

04/2008 - 11/2008

Research associate at Chair of Applied Mathematics I

### WORK ADDRESS

Nadja Ray  
Friedrich-Alexander  
Universität  
Erlangen-Nürnberg  
Lehrstuhl für Angewandte  
Mathematik 1  
Cauerstr. 11  
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### RESEARCH FOCI

Multiscale modeling Porous  
media applications  
Electrokinetic phenomena  
Partial Differential Equations

## PROJECTS

### **DFG Research Training Group 2339 “IntComSin” Interfaces, Complex Structures, and Singular Limits**

04/2018 - present      Principal investigator

### **DAAD Projektbezogener Personenaustausch Norwegen Upscaling Evolving Microstructures and its Applications**

01/2016 - 12/2017      Principal investigator

### **DFG Research Unit 2179 “MadSoil” Microaggregates: Formation and turnover of the structural building blocks of soils**

10/2015 - present      Principal investigator

## FELLOWSHIPS & AWARDS

### **Women's prize of the Faculty of Natural Sciences (FAU)**

10/2016 - 09/2017

### **Dr.-Körper-Preis**

2014      Prize for outstanding PhD thesis

### **PhD scholarships**

12/2011 - 09/2012      Förderung der Chancengleichheit für Frauen in Forschung und Lehre (FAU)

01/2009 - 09/2011      Studienstiftung des Deutschen Volkes

12/2008 - 11/2011      Deutsche Telekom Stiftung

### **Student scholarships**

02/2003 - 03/2008      Studienstiftung des Deutschen Volkes

## PUBLICATIONS

[10] Gärtner S., Frolkovič P., Knabner P., Ray N.: Efficiency and Accuracy of Micro-Macro Models for Mineral Dissolution, In: Water Resources Research 56 (2020)

[9] Zech S., Dultz S., Guggenberger G., Prechtel A., Ray N.: Microaggregation of goethite and illite evaluated by mechanistic modeling, In: Applied Clay Science 198 (2020)

[8] Ray N., Oberlander J., Frolkovic P.: Numerical investigation of a fully coupled micro-macro model for mineral dissolution and precipitation, In: Computational Geosciences (2019)

[7] Ray N., Schulz R.: Derivation of an effective dispersion model for electro-osmotic flow involving free boundaries in a thin strip, In: Journal of Engineering Mathematics (2019)

- [6] Rupp A., Guhra T., Meier A., Prechtel A., Ritschel T., Ray N., Totsche KU.: Application of a cellular automaton method to model the structure formation in soils under saturated conditions: A mechanistic approach, In: *Frontiers in Environmental Science* 7 (2019)
- [5] Schulz R., Ray N., Zech S., Rupp A., Knabner P.: Beyond Kozeny-Carman: Predicting the Permeability in Porous Media, In: *Transport in Porous Media* (2019)
- [4] Ray N., Rupp A., Schulz R., Knabner P.: Old and New Approaches Predicting the Diffusion in Porous Media In: *Transport in Porous Media* 124 (2018)
- [3] Rupp A., Totsche KU., Prechtel A., Ray N.: Discrete-Continuum Multiphase Model for Structure Formation in Soils Including Electrostatic Effects, In: *Frontiers in Environmental Science* 6(96) (2018)
- [2] Ray N., Rupp A., Prechtel A.: Discrete-continuum multiscale model for transport, biomass development and solid restructuring in porous media, In: *Advances in Water Resources* 107 (2017)
- [1] Ray N., van Noorden T., Frank F., Knabner P.: Multiscale Modeling of Colloid and Fluid Dynamics in Porous Media Including an Evolving Microstructure, In: *Transport in Porous Media* 95 (2012)