

Cover sheet to application

1 Personal data application

Name, first name	PhD András Kiss		
subject area	Immunology, Haematology		
personal ID	91697567		
University			
offer country	Hungary		
Scholarship programme	Research Stays for University Academics and Scientists, 2018		
Scholarship period	Jun 1, 2018	to	Jul 31, 2018
Resp. DAAD Unit	Ungarn Budapest / Ungarn		

2 Documents for application

which you upload your application documents are listed below.

Type of document	Name of the document
Curriculum vitae	Curriculum vitae
List of publications	List of publications
Study project/motivation	DAAD Scholarship Proposal
Time schedule	DAAD Scholarship time schedule
Invitation from host institution	Letter of recommendation for Dr. András Kiss
University degree certificates	Doctoral Degree Certificate
Language certificate	English language exam certificate
Language certificate	German language exam certificate
Letter of recommendation	DAAD Assessment (Foreign Applicants)

Application

1 General information

Scholarship programme	Research Stays for University Academics and Scientists, 2018
Status	Doctorate

2 Details for application

Note on completing the application form:

* Compulsory field (must be completed).

(*)Dependant compulsory field (must be completed if at least one other field in this section is completed).

1 Family name *	Kiss		
if applicable, name at birth			
Academic title	PhD		
First name(s) *	András		
Date of birth *	15.02.1985	Place of birth *	Budapest
Nationality *	Hungarian	2. Nationality	Select nationality ...
Form of address *	Mr.	Marital status *	single
Number of children	0		

2 Details for application

2 Home address

(Address at which you can be contacted currently)

c/o name	András Kiss
street address or PO box *	Kossuth 47
Zip code	7759
City *	Lánycsók
Country *	Hungary
Telephone number	+36203881324
Mobile phone number	+36203881324
Fax	
Email address *	akiss@gamma.ttk.pte.hu

Only use these fields to enter additional address information that find no place in the standard mandatory address details above.

2 Details for application

3 Address (work) / address during the semester *

yes no

University/institution	University of Pécs
Institute	Institute of Chemistry
Department	Department of General and Physical Chemistry
Faculty	Faculty of Science
street address or PO box *	Ifjúság útja 6.
Zip code	7624
City *	Pécs
Country *	Hungary
Telephone number	+36203881324
Mobile phone number	+36203881324
Fax	
Email address *	akiss@gamma.ttk.pte.hu

4 Occupation

teacher / researcher

5

Official position * assistant lecturer

6

2 Details for application

Please enter your destination institution / university

Planned destination institution 1 *

Destination country *	Germany	City *	Select location
Institution *	(Please select country first and place.)		
Other institution	<input checked="" type="checkbox"/> Saarland University Faculty of Medicine, Biophysics, Homburg		
Subject group *	Human medicine		
Subject *	Immunology, Haematology		

Planned destination institution 2

alternatively



additionally



None



7 Subject area / discipline / research field the application refers to

Subject group *	Math / Science
Subject *	Physical, Nuclear and Electrical Chemistry
Explanation	Application of electrochemical methods (mostly scanning electrochemical microscopy) in immunological studies.

8 Do you have an invitation from the host/destination institute? *

yes



No



9 Planned duration of stay: from 01.06.2018 to 31.07.2018

10 Duration of requested funding: from * 01.06.2018 to * 31.07.2018

2 Details for application

11 Short description of research/study/work project *(An extensive description should be added on a separate sheet) The project aims to elucidate a recently discovered detail about the immune system. It has been discovered by my mentor-to-be at the Center for Integrative Physiology and Molecular Medicine at the Saarland University Faculty of Medicine, that hydrogen-peroxide produced by the so-called bystander cells decrease the time that is necessary for the natural killer cells to find their targets. To elucidate this process further, cellular level investigations are necessary. The scanning electrochemical microscope (SECM) is an ideal tool for this purpose. With an appropriately small platinum microelectrode - used as an SECM tip - I'm planning to quantify the secreted hydrogen-peroxide by the bystander cells, while simultaneously monitoring the migration of the natural killer

12 What other interests do you associate with your planned stay in Germany? I have recently passed a basic german language exam, and I wish to continue improving my german.

13 Completed examinations (if applicable) (*)

Entry 1

Institution

Period: from

 to

Subject group

 Select group...

Subject

 (Please select first group of subjects.)

Type of exam

 Select test ...

14 Current/last home Institution

Institution *

 University of Pécs

15 Previous study/research/working stays or other activities abroad

Entry 1

Country

 Czech Republic

Institution, City/Province

 Masaryk University, Brno

Period: from

 01.07.2009 to 30.09.2009

Purpose

 joint research

2 Details for application

Entry 2

Country Czech Republic

Institution, City/Province Masaryk University, Brno

Period: from 01.08.2010 to 05.09.2010

Purpose joint research

[new entry](#)

[Delete this entry](#)

Entry 3

Country Spain

Institution, City/Province University of La Laguna, Tenerife

Period: from 17.05.2012 to 16.06.2012

Purpose joint research

[new entry](#)

[Delete this entry](#)

Entry 4

Country Israel

Institution, City/Province Hebrew University of Jerusalem, Ein Gedi

Period: from 17.02.2013 to 21.02.2013

Purpose conference presentation

[new entry](#)

[Delete this entry](#)

Entry 5

Country Finland

Institution, City/Province Åbo Akademi, Turku

Period: from 06.03.2013 to 26.06.2013

Purpose Erasmus scholarship

[new entry](#)

[Delete this entry](#)

2 Details for application

Entry 6

Country	Sweden		
Institution, City/Province	Malmö University, Malmö		
Period: from	11.06.2014	to	14.06.2014
Purpose	conference presentation		
new entry		Delete this entry	

Entry 7

Country	Germany		
Institution, City/Province	University of Regensburg, Regensburg		
Period: from	22.10.2015	to	26.10.2015
Purpose	short visit		
new entry		Delete this entry	

Entry 8

Country	Morocco		
Institution, City/Province	Ibn Zohr University, Agadir,		
Period: from	20.02.2016	to	28.02.2016
Purpose	short visit		
new entry		Delete this entry	

Entry 9

Country	Germany		
Institution, City/Province	Analytica Conference, München		
Period: from	10.05.2016	to	13.05.2016
Purpose	conference presentation		
new entry		Delete this entry	

2 Details for application

Entry 10

Country	Poland		
Institution, City/Province	Polish Academy of Sciences, Warsaw		
Period: from	13.08.2017	to	17.08.2017
Purpose	conference presentation		
new entry		Delete this entry	

16 Previous and current professional / teaching or artistic activities.

Entry 1

Institution, City / Province	University of Pécs		
Period: from	01.03.2014	to	15.11.2017
Activity	teaching and research		
new entry		Delete this entry	

17 Previous and current scholarships from the DAAD or other organisations *

yes none

Funding organisation / programme *	from *	to *
Erasmus scholarship	06.03.2013	26.06.2013
Apáczai Csere János Doctoral Scholarship	01.09.2013	31.08.2014

2 Details for application

18 Membership in scientific organisations, academic awards *

yes No

Explanation *

19 Will you be funded by another organisation during the planned funding period or have you applied for other funding for this period? *

yes no

From which?

Organisation *	Status	from *	to *
	Select status...		
	Select status...		
	Select status...		

20 Language skills (not documented)

Language	very good	good	average	poor
English	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
German	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Choose a language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Description of other language(s)

2 Details for application

21

Other comments/information you think might be of relevance to your application or which should be included in the assessment of your achievements and personal suitability (e.g. details about special extracurricular activities, but also impediments such as illness or disability, if this had a negative impact on your academic progress/achievements and should be considered in a comparison of applicants).

Important notice

Please save the form after editing on your computer. Please use the „save as“ option to be aware of the file location of the last edited version of the application form on your computer. You can return to the portal to upload the edited form and continue your application by clicking the link

[DAAD-Portal öffnen](#)

András Kiss

Curriculum vitæ

Móricz Zsigmond tér 3.
7622 Pécs
Hungary
 ☎ +36 (20) 388 1324
 ☎ +36 (72) 501 500 61021
 ☎ +36 (72) 501 518
 ☐ akiss@gamma.pte.ttk.pte.hu
 ↗ <http://kemia.ttk.pte.hu/fizkem>
 ☺ andras-kiss



Current occupation

position Assistant lecturer (2015–)
 institution Department of General and Physical Chemistry
 University of Pécs
 7624, Pécs, Ifjúság útja 6.

Education

1997-2003 **High school diploma**, Kisfaludy Károly Highschool, Mohács, Grade: 4.6/5 (*Excellent*).
 2003–2011 **Biologist MSc.**, University of Pécs, Pécs, Grade: 4.4/5 (*Good*).
 No: 132/2011
 2011–2014 **PhD Scholarship (Doctoral candidate)**, University of Pécs, Pécs.

Master's thesis

title *Development and application of a carbon-dioxide microcell as SECM microtip. Estimation of carbon-dioxid output of yeast colonies by model calculations.*
 supervisor Dr. Géza Nagy DSc.
 defended 2011

Doctoral dissertation

title *Recent Advances in Scanning Electrochemical Microscopy*
 supervisor Dr. Géza Nagy DSc.
 defended 2017

Languages

Hungarian	Mother tongue
English	Advanced C1 2016.02.16. BME Advanced language exam, certificate: no. 1309673
German	Treshold B1 2017.09.11. BME Basic language exam, certificate: no. 1915034

Area of focus

Electrochemistry, microelectrodes, Scanning Electrochemical Microscopy, corrosion, numerical simulations.

Teaching

- 2011- Physical Chemistry laboratory practice for pharmacy students (eng, hun)
Problem solving seminar for pharmacy students (eng, hun)
- 2014- Physical Chemistry III. laboratory practice (hun)
- 2015- Applied Environmental Science, laboratory practice (hun)
Microelectrodes, facultative laboratory practice (hun)
Chemical Sensors, laboratory practice (hun)
Mathematics of Physical Chemistry, seminar (hun)
Introduction to Physico-Chemical Measurements, laboratory practice (hun)

Computer skills

<i>Programming</i>	C, C++, Fortran, Java, Bash script	<i>Graphics</i>	Inkscape, CorelDRAW, Gnu- plot, Gimp
<i>Word processing</i>	Microsoft products, L ^A T _E X 2 _{&}	<i>Plotting</i>	Gnuplot, Tikz, Origin, Qtiplot
<i>SA</i>	Linux, Windows, BSD, UNIX	<i>Version control</i>	git, github

Scholarships, internships and short visits

- 2005.08.01- **Summer internship**, Balaton Limnological Research Institute, Tihany.
2005.08.26 Effect of various salt concentration on freshwater algae.
- 2006 Internship, Department of Biophysics, University of Pécs, Pécs.
Investigation of the interaction of actin and titin.
- 2006 Internship, Department of Ecology, University of Pécs, Pécs.
Study on the ecology of small mammals.
- 2006.07.31- **Summer internship**, Balaton Limnological Research Institute, Tihany.
2006.08.25 Effect of turbidity and depth on the picoalgæcomposition of lake Balaton.
- 2007-2009 Internship, Department of Microbiology, University of Pécs, Pécs.
Studying the oxidative stress induction effect of patulin on *Schizosaccharomyces cerevisiae*
Studying the carcinogenic and mutagenic effect of primycin, a new antibiotics; with
DEL and Ames tests.
- 2009.07- Research, Masaryk University, Brno, Czech Republic.
2009.09 Developing a tyrosinase based polyphenol sensor.
Investigation of adhesion of mammalian cells on the surface of quartz microbalances.
- 2010.08.01- Research, Masaryk University, Brno, Czech Republic.
2010.09.05 Development of a selective polyphenol sensor.

- 2009–2011 **Internship, main focus**, Department of General and Physical Chemistry, University of Pécs, Pécs.
Development of a CO₂ microcell, SECM scanning, simulation of diffusion.
- 2012.05.17– **Research**, University of La Laguna, Canary Islands, Spain.
- 2012.06.16 Fabrication of a low resistance Mg²⁺-ion selective micropipette electrode for potentiometric Scanning Electrochemical Microscopy monitoring of microgalvanic corrosion processes.
- 2013.03.06– **Erasmus scholarship**, Åbo Akademi, Turku, Finland.
- 2013.06.26 Improving the lower detection limit of ion-selective microelectrodes.
Development of a conductivity based airborne carbon nanotube sensor.
- 2013.09– **Apáczai Csere János Scholarship**, University of Pécs, Pécs.
- 2014.08 Investigation of corrosion processes with Scanning Electrochemical Microscope, TÉT-12-RO-1-2013-0018, TÁMOP-4.2.2.A-11/1/KONV-2012-0065
- 2015.10.22– **Short visit**, Department of Analytical Chemistry, University of Regensburg, 2015.10.26 Regensburg, Germany.
- 2016.02.20– **Short visit**, Department of Physical Chemistry, Ibn Zohr University, Agadir, 2016.02.28 Morocco.

Publications

1. András Kiss, László Kiss, Barna Kovács, Géza Nagy
Air Gap Microcell for Scanning Electrochemical Microscopic Imaging of Carbon Dioxide Output. Model Calculation and Gas Phase SECM Measurements for Estimation of Carbon Dioxide Producing Activity of Microbial Sources
Electroanalysis 23, no. 10 (2011): 2320-2326.
IF.: 2.14, cited by: 3
2. Ricardo M. Souto, Javier Izquierdo, Juan José Santana, András Kiss, Lívia Nagy, Géza Nagy
Progress in scanning electrochemical microscopy by coupling potentiometric and amperometric measurement modes
Current Microscopy Contributions to Advances in Science and Technology, Formatec Research Center, Badajoz (2012): 1407-1415
cited by: 3
3. Lívia Nagy, Gergely Gyevhai, András Kiss, Ricardo Souto, Javier Izquierdo, Géza Nagy
Speciális célra szolgáló mikroelektródok kifejlesztése és alkalmazása
Magyar Kémiai Folyóirat 119, 2-3. (2013): 104-109.

4. Ricardo M. Souto, **András Kiss**, Javier Izquierdo, Lívia Nagy, István Bitter, Géza Nagy
Spatially-resolved imaging of concentration distributions on corroding magnesium-based materials exposed to aqueous environments by SECM
Electrochemistry Communications 26 (2013): 25-28.
IF.: 4.85, cited by: 31
5. **András Kiss**, Ricardo M. Souto, Géza Nagy
Investigation of Mg/Al alloy sacrificial anode corrosion with Scanning Electrochemical Microscopy
Periodica Polytechnica Chemical Engineering 57, no. 1-2 (2013): 11-14.
IF.: 0.30, cited by: 5
6. Javier Izquierdo, **András Kiss**, Juan José Santana, Lívia Nagy, István Bitter, Hugh S. Isaacs, Géza Nagy, Ricardo M. Souto
Development of Mg^{2+} ion-selective microelectrodes for potentiometric scanning electrochemical microscopy monitoring of galvanic corrosion processes
Journal of The Electrochemical Society 160, no. 9 (2013): C451-C459.
IF.: 3.27, cited by: 23
7. **András Kiss**, Géza Nagy
New SECM scanning algorithms for improved potentiometric imaging of circularly symmetric targets
Electrochimica Acta 119 (2014): 169-174.
IF.: 4.50, cited by: 8
8. Zsuzsanna Őri, **András Kiss**, Anton Alexandru Ciucu, Constantin Mihailciuc, Cristian Dragos Stefanescu, Lívia Nagy, Géza Nagy
Sensitivity enhancement of a „bananatrode” biosensor for dopamine based on SECM studies inside its reaction layer
Sensors and Actuators B: Chemical 190 (2014): 149-156.
IF.: 4.10, cited by: 4
9. **András Kiss**, Géza Nagy
Deconvolution of potentiometric SECM images recorded with high scan rate
Electrochimica Acta 163 (2015): 303-309.
IF.: 4.50, cited by: 7
10. **András Kiss**, Géza Nagy
Deconvolution in potentiometric SECM
Electroanalysis 27, no. 3 (2015): 587-590.
IF.: 2.14, cited by: 2

11. Javier Izquierdo, Bibiana M Fernández-Pérez, Dániel Filotás, Zsuzsanna Őri, **András Kiss**, Romen T Martín-Gómez, Lívia Nagy, Géza Nagy, Ricardo M Souto
Imaging of Concentration Distributions and Hydrogen Evolution on Corroding Magnesium Exposed to Aqueous Environments Using Scanning Electrochemical Microscopy
Electroanalysis 28, (2016): 2354-2366.
IF.: 2.471, cited by: 2
12. A. El Jaouhari, Dániel Filotás, **András Kiss**, M. Laabd, E. A. Bazzaoui, Lívia Nagy, Géza Nagy, A. Albourine, J. I. Martins, R. Wang
SECM investigation of electrochemically synthesized polypyrrole from aqueous medium
Journal of Applied Electrochemistry 46 (2016): 1199-1209.
IF.: 2.223
13. **András Kiss**, Dániel Filotás, Ricardo M Souto, Géza Nagy
The effect of electric field on potentiometric Scanning Electrochemical Microscopic imaging
Electrochemistry Communications 77 (2017): 138-141.
IF.: 4.569
14. D Filotás, BM Fernández-Pérez, J Izquierdo, **A Kiss**, L Nagy, G Nagy, RM Souto
Improved potentiometric SECM imaging of galvanic corrosion reactions
Corrosion Science 129 (2017): 136-145
IF.: 4.245

Presentations and Posters

1. CO₂ Partial Pressure Imaging in Gas Phase with Scanning Electrochemical Microscopy (SECM), Poster, *X. CECE Conference, Pécs, 2010*.
2. Selective Amperometric Determination Of Pyrocatechol and Phenol in Wines with Flow-Injection Analysis, Poster, *X. CECE Conference, Pécs, 2010*.
3. Four-Channel Enzyme Biosensor for Determination of Phenols in Wine, Poster, *X. CECE Conference, Pécs, 2010*.
4. Development of a CO₂ microcell, and its application as measuring tip in Scanning Electrochemical Microscope. Scanning in gas phase over biological samples, Presentation, *XXXIV. Szegedi Kémiai Előadói Napok, Szeged, 2011*.
5. Investigation of Mg/Al alloy sacrificial anode corrosion with Scanning Electrochemical Microscopy, Poster, *Chemical Engineering Workshop '12, Veszprém, 2012*.
6. Investigation of galvanic corrosion of the Fe-Mg galvanic pair with Scanning Electrochemical Microscope, Poster, *Chemical Sensors Workshop '12, Pécs, 2012*.

7. Fabrication of a new, solid contact Mg²⁺ ion-selective electrode, and its application in Scanning Electrochemical Microscopic corrosion studies, Presentation, *1st Doctoral Workshop on Natural Sciences, Pécs, 2012*.
8. A new, solid contact Mg²⁺ ion-selective electrode as measuring tip for Scanning Electrochemical Microscope in corrosion studies, Presentation, *János Szentágothai Memorial Conference and Student Competition, Pécs, 2012 October 29-30*.
9. New insights in the corrosion mechanism of magnesium by SECM, Presentation, *7th Workshop on Scanning Electrochemical Microscopy (SECM) and Related Techniques, Ein Gedi, Israel, February 17-21, 2013*.
10. High-speed potentiometric SECM imaging of radially symmetric targets, Presentation, *ESEAC Malmö, Sweden, 11-14 June 2013*.
11. Deconvolution of potentiometric SECM images recorded with high scanrate, Poster, *Mátrafüred Conference 2014 June 13-16, Visegrád, Hungary*.
12. High-speed SECM imaging, Plenar presentation, *Analytica Conference 2016 May 10-13, München, Germany*.
13. The effect of electric field on potentiometric Scanning Electrochemical Microscopic imaging, Poster presentation, *Mátrafüred Conference 2017 11-16 June, Visegrád, Hungary*.
14. High-speed SECM imaging, Poster presentation, *9th Workshop on Scanning Electrochemical Microscopy and Related Techniques, 2017 13-17 August, Warsaw, Poland*.

List of publications

András Kiss PhD

November 15, 2017

1 Peer reviewed publications

1. **András Kiss**, László Kiss, Barna Kovács, Géza Nagy, Air Gap Microcell for Scanning Electrochemical Microscopic Imaging of Carbon Dioxide Output. Model Calculation and Gas Phase SECM Measurements for Estimation of Carbon Dioxide Producing Activity of Microbial Sources, *Electroanalysis 23, no. 10 (2011): 2320-2326.*
2. Ricardo M. Souto, Javier Izquierdo, Juan José Santana, **András Kiss**, Lívia Nagy, Géza Nagy. Progress in scanning electrochemical microscopy by coupling potentiometric and amperometric measurement modes, *Current Microscopy Contributions to Advances in Science and Technology, Formatec Research Center, Badajoz (2012): 1407-1415*
3. Lívia Nagy, Gergely Gyetvai, **András Kiss**, Ricardo Souto, Javier Izquierdo, Géza Nagy, Speciális célra szolgáló mikroelektródok kifejlesztése és alkalmazása, *Magyar Kémiai Folyóirat 119, 2-3. (2013): 104-109.*
4. Ricardo M. Souto, **András Kiss**, Javier Izquierdo, Lívia Nagy, István Bitter, Géza Nagy, Spatially-resolved imaging of concentration distributions on corroding magnesium-based materials exposed to aqueous environments by SECM, *Electrochemistry Communications 26 (2013): 25-28.*
5. **András Kiss**, Ricardo M. Souto, Géza Nagy, Investigation of Mg/Al alloy sacrificial anode corrosion with Scanning Electrochemical Microscopy, *Periodica Polytechnica Chemical Engineering 57, no. 1-2 (2013): 11-14.*
6. Javier Izquierdo, **András Kiss**, Juan José Santana, Lívia Nagy, István Bitter, Hugh S. Isaacs, Géza Nagy, Ricardo M. Souto, Development of Mg²⁺ ion-selective microelectrodes for potentiometric scanning electrochemical microscopy monitoring of galvanic corrosion processes, *Journal of The Electrochemical Society 160, no. 9 (2013): C451-C459.*
7. **András Kiss**, Géza Nagy, New SECM scanning algorithms for improved potentiometric imaging of circularly symmetric targets, *Electrochimica Acta 119 (2014): 169-174.*
8. Zsuzsanna Őri, **András Kiss**, Anton Alexandru Ciucu, Constantin Mihailciuc, Cristian Dragos Stefanescu, Lívia Nagy, Géza Nagy, Sensitivity enhancement of a „bananatrode” biosensor for dopamine based on SECM studies inside its reaction layer, *Sensors and Actuators B: Chemical 190 (2014): 149-156.*

9. **András Kiss**, Géza Nagy, Deconvolution of potentiometric SECM images recorded with high scan rate, *Electrochimica Acta* 163 (2015): 303-309.
10. **András Kiss**, Géza Nagy, Deconvolution in potentiometric SECM, *Electroanalysis* 27, no. 3 (2015): 587-590.
11. Javier Izquierdo, Bibiana M Fernández-Pérez, Dániel Filotás, Zsuzsanna Őri, **András Kiss**, Romen T Martín-Gómez, Lívia Nagy, Géza Nagy, Ricardo M Souto, Imaging of Concentration Distributions and Hydrogen Evolution on Corroding Magnesium Exposed to Aqueous Environments Using Scanning Electrochemical Microscopy, *Electroanalysis* 28, (2016): 2354-2366.
12. A. El Jaouhari, Dániel Filotás, **András Kiss**, M. Laabd, E. A. Bazzaoui, Lívia Nagy, Géza Nagy, A. Albourine, J. I. Martins, R. Wang, SECM investigation of electrochemically synthesized polypyrrole from aqueous medium, *Journal of Applied Electrochemistry* 46 (2016): 1199-1209.
13. **András Kiss**, Dániel Filotás, Ricardo M Souto, Géza Nagy, The effect of electric field on potentiometric Scanning Electrochemical Microscopic imaging, *Electrochemistry Communications* 77 (2017): 138-141.
14. D Filotás, BM Fernández-Pérez, J Izquierdo, **A Kiss**, L Nagy, G Nagy, RM Souto, Improved potentiometric SECM imaging of galvanic corrosion reactions, *Corrosion Science* 129 (2017): 136-145

2 Presentations and posters

1. CO₂ Partial Pressure Imaging in Gas Phase with Scanning Electrochemical Microscopy (SECM), Poster, X. CECE Conference, Pécs, 2010.
2. Selective Amperometric Determination Of Pyrocatechol and Phenol in Wines with Flow-Injection Analysis, Poster, X. CECE Conference, Pécs, 2010.
3. Four-Channel Enzyme Biosensor for Determination of Phenols in Wine, Poster, X. CECE Conference, Pécs, 2010.
4. Development of a CO₂ microcell, and its application as measuring tip in Scanning Electrochemical Microscope. Scanning in gas phase over biological samples, Presentation, XXXIV. Szegedi Kémiai Előadói Napok, Szeged, 2011.
5. Investigation of Mg/Al alloy sacrificial anode corrosion with Scanning Electrochemical Microscopy, Poster, Chemical Engineering Workshop '12, Veszprém, 2012.
6. Investigation of galvanic corrosion of the Fe-Mg galvanic pair with Scanning Electrochemical Microscope, Poster, Chemical Sensors Workshop '12, Pécs, 2012.
7. Fabrication of a new, solid contact Mg²⁺ ion-selective electrode, and its application in Scanning Electrochemical Microscopic corrosion studies, Presentation, 1st Doctoral Workshop on Natural Sciences, Pécs, 2012.

8. A new, solid contact Mg²⁺ ion-selective electrode as measuring tip for Scanning Electrochemical Microscope in corrosion studies, Presentation, *János Szentágothai Memorial Conference and Student Competition, Pécs, October 29-30, 2012*.
9. New insights in the corrosion mechanism of magnesium by SECM, Presentation, *7th Workshop on Scanning Electrochemical Microscopy (SECM) and Related Techniques, Ein Gedi, Israel, February 17-21, 2013*.
10. High-speed potentiometric SECM imaging of radially symmetric targets, Presentation, *ESEAC Malmö, Sweden, June 11-14, 2013*.
11. Deconvolution of potentiometric SECM images recorded with high scanrate, Poster, *Mátrafüred Conference, June 13-16, 2014. Visegrád, Hungary*.
12. High-speed SECM imaging, Plenar presentation, *Analytica Conference 2016, May 10-13, 2016., München, Germany*.
13. The effect of electric field on potentiometric Scanning Electrochemical Microscopic imaging, Poster presentation, *Mátrafüred Conference 2017 11-16 June, Visegrád, Hungary*.
14. High-speed SECM imaging, Poster presentation, *9th Workshop on Scanning Electrochemical Microscopy and Related Techniques, 2017 13-17 August, Warsaw, Poland*.

DAAD Scholarship Proposal

András Kiss PhD

November 15, 2017

I have met Dr. Monika Bozem from Saarland University in Homburg, Germany at the „*9th Workshop on Scanning Electrochemical Microscopy and Related Techniques*” held in Warsaw, Poland in August 2017. Since then we are in correspondence with each other discussing scientific topics in the field of electrochemistry and its relevance for solving patho-/physiological questions in immunology. With time it turned out that - besides exchange of theoretical knowledge – also practical collaboration could make sense. Thus, a joint-research idea started to mature, resulting in the following proposal. The research group in the Biophysics department of the University in Homburg is headed by Prof. Dr. Markus Hoth. The main field of research is immunology with specifications on signaling cascades which control immunological processes. Primary blood cells from human blood donors, cultured cell lines as well as primaryblood cells of the mouse are employed for the investigations.

The project of the planned collaboration aims at elucidating the role of H_2O_2 in guiding natural killer (NK) cells to their targets. Targets are recognized by the NK cells as “invaders” and are killed. NK cells thus play an important role for the immunological defense. Recently, it has been discovered by Zhou et al. in the laboratory of Prof. Hoth, where I plan to work during the DAAD scholarship, that so called „bystander” cells decrease the time that is necessary for the NK cells to find their target [1]. As bystander cells act all „neutral” cells surrounding the NK cells in the blood (or tissue). The exact mechanism of redox regulation of target killing is largely unknown. It is speculated and partially confirmed that not only target finding but also the killing procedure itself is controlled by redox processes.

Since it was shown that not a group of NK cells are attracted to a group of target cells, but that individual single NK cells are guided to their individual target cells, further elucidating the underlying mechanism requires single bystander (and probably NK and target) cell H_2O_2 measurements. For this purpose, the scanning electrochemical microscope (SECM) is an ideal tool by which extracellular H_2O_2 (produced by single cells) can be determined electrochemically with high sensitivity and high temporal and spatial resolution. In Prof. Hoth’s group, the SECM technique

has been established for measurements at single blood cells as published in the recent article by Bozem et al. in ARS [2].

A main part of my doctoral thesis [3] was improving the SECM technique at a set-up, slightly different from the one in Prof. Hoth's group. I have come up with and proved several innovative suggestions to decrease imaging time and improve imaging efficiency. I am experienced in designing experiments for specific demands by modifying software and hardware of the SECM technique. Thus, I would be able to substantially contribute to the sophisticated experiments needed to get deeper insight into the immunological problem described before.

At the above mentioned SECM meeting in Poland, I had the opportunity to visit the company HEKA Elektronik which presented the ElProScan SECM system at the exhibition area. It is exactly the same system that is employed in Homburg. With the help of Dr. Heinemann, the representative of HEKA, I have already slightly familiarized myself with the equipment and its working principle.

For the SECM technique, ultramicroelectrodes (UMEs) are used as sensors. For the above mentioned experiments with the NK cells, platinum UMEs with a tip diameter of 10 µm or below are required. Those electrodes which additionally should have a special geometry cannot be purchased from a company; they are produced in Prof. Hoth's lab. I am also experienced in electrode construction since nine years; this practice should make fabrication - even of the special UMEs – a lot easier.

My scientific career includes study of and Master of Science (MSc) in biology followed by PhD in electrochemistry. Thus, I might be well prepared to working in the scientific field represented by Prof. Hoth's group.

I am planning to spend June and July 2018 at the Department of Biophysics (Prof. Hoth) at the Saarland University, Faculty of Medicine in Homburg. Dr. Monika Bozem, leading the sub-group of redox physiology will be my mentor. The main goals of the proposal are electrochemical (SECM) measurements to further elucidate target cell killing by NK cells. The experiments should deliver results on the single cell level which cannot be obtained by other methods. Thereby the experiments could supply the ongoing research in Prof. Hoth's group.

The work plan is as follows:

- First half of June: Settling in, obtaining routine with the specific instruments used in the research, mainly the SECM set-up and the cell culture methods.
- Second half of June and first half of July: Establishment of electrochemical measuring protocols as well as culture and treatment of cells. Production of 10 µm Pt-UMEs. SECM experiments to test for H₂O₂ production by bystander,

NK and target cells (single cells of each type alone and in a multi-cellular system).

- Second half of July: Calculations, analyses, summarizing, concluding the experiments.

From this project I expect further details about redox signaling mechanisms in cell killing. These could serve as an important contribution to better understand functioning of the immune system. Additionally, results of my experiments could eventually be an essential part to broaden the research field of Prof. Hoth's group.

András Kiss PhD
Univeristy of Pécs
Dep. of General and Physical Chemistry

References

- [1] Zhou, Xiao, Renping Zhao, Karsten Schwarz, Matthieu Mangeat, Eva C. Schwarz, Mohamed Hamed, Ivan Bogeski, Volkhard Helms, Heiko Rieger, and Bin Qu. "Bystander cells enhance NK cytotoxic efficiency by reducing search time." *Nature Scientific Reports* 7 (2017).
- [2] Bozem, Monika, Phillip Knapp, Valentin Mirceski, Ewa Slowik, Ivan Bogeski, Reinhard Kappl, Christian Heinemann, and Markus Hoth. "Electrochemical Quantification of Extracellular Local H₂O₂ Kinetics Originating from Single Cells." *Antioxidants and Redox Signaling* (2017).
- [3] András, Kiss. "Recent Advances in Potentiometric Scanning Electrochemical Microscopy." *University of Pécs, Doctoral School of Chemistry*, (2017).

DAAD Scholarship Timeschedule

András Kiss PhD

November 15, 2017

The work will be performed at the Saarland University, Faculty of Medicine, Department of Biophysics.

- First half of June: Settling in, obtaining routine with the specific instruments used in the research, mainly the SECM set-up and the cell culture methods.
- Second half of June and first half of July: Establishment of electrochemical measuring protocols as well as culture and treatment of cells. Production of 10 μm Pt-UMEs. SECM experiments to test for H_2O_2 production by bystander, NK and target cells (single cells of each type alone and in a multi-cellular system).
- Second half of July: Calculations, analyses, summarizing, concluding the experiments.

András Kiss PhD
University of Pécs
Dep. of General and Physical Chemistry

Saarland University | Faculty of Medicine | CIPMM | 66421 Homburg

Prof. Dr. Markus Hoth

Biophysics

Dean of Preclinics

Saarland University
Faculty of Medicine
CIPMM, Building 48
66421 Homburg

fon: +49 (0) 6841 1616303
fax: +49 (0) 6481 1616302
markus.hoth@uks.eu

Date 13.11.2017

Subject Letter of recommendation for Dr. András Kiss

To Whom It May Concern,

Dr. András Kiss from University of Pécs, Hungary asked me for a possibility to work in our research group during a DAAD scholarship (probably June/July 2018).

I would appreciate his contribution to our current research in immunology, because he combines knowledge in biology/physiology with experience in electrochemistry.

Especially, we are interested in the regulation of cell killing by redox mechanisms, a challenge that can only be approached - on the single cell level - with electrochemical methods. As we recently found, killing of pathogenic/foreign cells in the body by natural killer cells is enhanced due to H_2O_2 production of "bystander" cells, which are not recognized as invaders and are not killed (Zhou et al. Scientific Reports 7, 2017). For the experiments with white blood cells, the SECM technique and Pt-ultramicroelectrodes should be applied. Using this method, H_2O_2 in the extracellular space of individual living cells can be measured non-invasively and with high sensitivity and selectivity. Dr. Monika Bozem is the leader of the sub-group of redox physiology; the applicant should work mainly under her mentorship. Because of the overlapping topic, there will be scientific alignment also with other sub-groups.



Since 2012 we have developed and adapted the SECM technique in collaboration with Dr. Heinemann from HEKA Elektronik (Lambrecht, Germany). Our *EProScan* system is well suited to investigate the above mentioned immunological question. In a recent publication, our equipment and its application in the immunological field have been described (Bozem et al., Antioxidant & Redox Signaling, 2017).

A workstation to fabricate the ultramicroelectrodes needed for the special purpose is approved in daily use, and several lab rooms are specialized for cell preparation and culture. Experiments with human blood cells have been authorized by the local ethics committee in the declaration from April, 16th, 2015 (84/15).

The working plan for A. Kiss' stay in Homburg sounds reasonable and practicable and shows great motivation and good preconditions of the applicant. His investigations could fill a small but important gap that was recently discovered along the "bystander cell" studies of Zhou et al., and would thus ideally mesh with our current research topics. With the expected results of Kiss' measurements we could further improve our knowledge about redox signaling of immunological processes.

I therefore strongly recommend the support of his application for a DAAD scholarship.

Sincerely yours

Markus Hoth

OKLEVÉL

DEGREE CERTIFICATE

Mi, a Pécsi Tudományegyetem Rektora és Egyetemi Doktori Bizottsága köszöntjük az olvasót.
Elődeink dicséretre méltó rendelkezése, hogy azok, akik tisztes tanulmányokra adták magukat,
tudományosságuk jogosan megillető tanúbizonyságát törvényszabta módon megszerezzék. Mivel tehát

Kiss András

aki Budapesten, az 1985. év február hó 15. napján született,
a különböző jogszabályokban előírt tanulmányait követőleg tudományos felkészültségét egyetemünk szabályszerűleg
felállított bizottságai előtt szigorú vizsgák keretében bebizonította, értekezését a kémia területén nyilvánosan
megvédte, ezért őt
az alant írt napon, hónapban és évben summa cum laude eredménnyel

doktorrá (Doctor of Philosophy)

avattuk, nyilvánítottuk és kihirdettük, felruházván őt mindenkor előjogokkal, melyek az egyetemi doktorokat a
jogszabályok és a
szokások alapján megilletik. Mindezek hiteléül gondoskodtunk arról, hogy részére ez, az egyetem nagyobb
pecsétjével és a szokásos aláírásokkal ellátott oklevél kiadassék.

Kelt Pécsett, a 2017.esztendő október havának 3. napján.

Bélyácz Iván

.....
Prof. Dr. Bélyácz Iván
az Egyetemi Doktori Bizottság elnöke

Bódis József

.....
Prof. Dr. Bódis József
a Pécsi Tudományegyetem rektora

Ikt.: 107/2017./Ph.D.



Bélyácz Iván

.....
Prof. Dr. Iván Bélyácz
President of the Doctoral Committee

Bódis József

.....
Prof. Dr. József Bódis
Rector of the University of Pécs

rn.: 107/2017./Ph.D./a

The Rector and the Doctoral Committee of the University of Pécs, salute the Reader.

In compliance with the time-honoured traditions of the University, whereby upon those who have demonstrated
sufficient advancement in their studies the degree of Doctor of Philosophy shall be conferred and since

András Kiss

born in Budapest, in the country of Hungary, on the 15th of February in the year of 1985 has proven his knowledge in
examinations held in front of the committees established by the statutes of the University and has successfully
defended his doctoral dissertation in public in the
field of chemistry, we have conferred upon him, on the date inscribed below,
the degree of

Doctor of Philosophy

summa cum laude

with all rights and privileges ordained by law and custom. This diploma stands in testimony thereof bearing the Great
Seal of the
University and the signatures of its Officers.

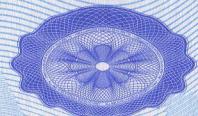
Given in Pécs, Hungary, on this 3rd day of October Two Thousand and Seventeen.

BIZONYÍTVÁNY ÁLLAMILAG ELISMERT NYELVVIZSGÁRÓL
STATE ACCREDITED LANGUAGE EXAMINATION CERTIFICATE
STAATLICH ANERKANNTE SPRACHPRÜFUNGSZEUGNIS
CERTIFICAT D'EXAMEN DE LANGUE RECONNU PAR L'ÉTAT

GA060-30668

Anyakönyvi szám
Registration Number
Registrationsnummer
Numéro d'enregistrement officiel

Tanúsítjuk, hogy
We hereby certify that
Hiermit wird bestätigt, dass
Nous confirmons que



1309673

Bizonyítványszám
Serial Number
Zeugnis-Nummer
Nº du certificat



Kiss András

Név/Name/Name/Nom et prénom

Budapest

Születési hely/Place of Birth
Geburtsort/Lieu de naissance

1985. február 15.

Születési idő/Date of Birth
Geburtsdatum>Date de naissance

ERedményes Államilag elismert nyelvvizsgát tett
HAS SUCCESSFULLY PASSED THE STATE ACCREDITED
LANGUAGE EXAMINATION
DIE STAATLICH ANERKANNTEN SPRACHPRÜFUNG
ERFOLGREICH ABGELEGT HAT
A PASSÉ AVEC SUCCÈS L'EXAMEN DE LANGUE
RECONNU PAR L'ÉTAT

GA060-30668

1309673

BME Nyelvvizsgaközpont

Vizsgaközpont
Examination Centre
Prüfungszentrum
Centre d'examen

Penta Unió Oktatási Centrum

Vizsgahely
Examination Site
Prüfungsort
Lieu de l'examen

Pécs

Város/Town
Stadt/Ville

2011. január 25.

Vizsgaidópont/Date of exam
Prüfungstermin/Date de l'examen

általános
general
Allgemeinsprache
général

angol
English
Englisch
anglais

felsőfokú (C1)
advanced (C1)
Oberstufe (C1)
supérieur (C1)

komplex
combined
kombiniert
complexe

Nyelv/Language
Sprache/Langue

Fok/Level
Stufe/Niveau

Típus/Type
Typ/Type

T. Kiss András
Vizsgázatot testületelnök
President of the Examination Board
Vorsitzende/r der Prüfungskommission
Président du corps des examinateurs



C. B. C.
Vizsgaközpont vezetője
Director of the Examination Centre
Leiter/in des Prüfungszentrums
Directeur du centre d'examen

2011. február 16.

MH010-21893

Anyakönyvi szám
Registration Number

1915034

Bizonyítványszám
Serial Number

Tanúsítjuk, hogy
We hereby certify that

Kiss András

Név
Name

Budapest

Születési hely
Place of Birth

1985. február 15.

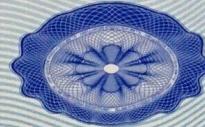
Születési idő
Date of Birth

ERedményes államilag elismert
nyelvvizsgát tett

Has successfully passed the state accredited
language examination

MH010-21893

1915034



ELTE Origó Nyelvi Centrum Kft.

Vizsgaközpont
Examination Centre

ORIGO nyelvvizsga
kétnyelvű

Vizsgarendszer
Examination System

Pécsi Tudományegyetem Idegen Nyelvi Központ

Vizsgahely
Examination Site

Pécs

Város
Town

2017. szeptember 11.

Vizsgaidőpont
Date of exam

általános
general

német
German

Nyelv
Language

alapfok (B1)
threshold (B1)

Fok
Level

komplex
combined

Típus
Type


Vizsgáztató testület elnöke
President of the Examination Board



2017. október 11.



DAADGA0000084925

Assessment for Scholarship Applications by foreign Applicants

1 Personal details

Family name, first name

Kiss, András

E-Mail address

akiss@gamma.ttk.pte.hu

Offer-/home country

Hungary

Scholarship programme

Research Stays for University Academics and Scientists, 2018

Funding period from

Jun 1, 2018

to

Jul 31, 2018

Responsible DAAD section

ST21 - Ostmitteleuropa, Südosteuropa, Türkei

Subject

Physical, Nuclear and Electrical Chemistry

Assesor's Name

DSc, PhD Géza Nagy

Assesor's university/institute

University of Pécs

General Information assessors

The selection process for awarding DAAD scholarships is based on the principle of academic self-government. Funding decisions for DAAD programmes are generally made by independent academic Selection Committees. These play a central role in the work of the DAAD. The DAAD would like to thank everybody who meets an applicant's request for a report to accompany their DAAD scholarship application. These reports, along with certificates documenting the applicant's academic achievements and the applicant's description of the study or research project, form an important decision-making basis for the Selection Committee's scholarship award recommendation.

Assessment for Scholarship Applications by foreign Applicants

2 Assessment of application

Information about assessor (to be completed by assessor)

Name	Géza Nagy
Academic title	DSc, PhD
Position	Professor emeritus
Subject	Electroanalytical Chemistry
University/institute	University of Pécs
Address	Ifjúság útja 6.
E-Mail address	g-nagy@gamma.ttk.pte.hu

Information about assessor (to be completed by assessor)

1 - Since when and in what capacity have you known the applicant?

I first met András on 1st September 2008 when he enrolled in my physical chemistry class. I taught the class as professor of the subject. Since then I have been his supervisor, first in his MSc then in his Doctoral studies.

2 - The applicant is/was among the best in her/his field of study (in %):

5% 10% 20% 30% no statement possible Size of the comparison group 46

3 - How does the applicant stand out in academic terms and how would you assess his/her potential?

He was an excellent student, obtained the best grades for physical chemistry exam and practice. In the summer periods during his undergraduate years he participated in research projects held in the Limnological Institute of Tihany (Hungary) and in the Masaryk University (Brno, Czech Republic). András Kiss is a young scientist who is very much interested in his research, he is well trained in theory. He has new ideas and strongly interested in realizing them. He is much better than average in experimental skill. He has extensive experience in computer programming (C, C++, Java, Basic) and in model calculations. He likes to build electronic circuits for his experiments. His English is excellent, he writes scientific papers with high quality. He speaks German at a basic level.

4 - How does the applicant stand out in personal terms and how would you assess his/her potential?

He is a problem free young person, a good colleague. He regularly takes part in sporting activities (table tennis, running, hiking, soccer). He plays guitar at a high level, earlier as a member of a classical band. He can easily go along with members of other research groups. He has experience working abroad.



Assessment for Scholarship Applications by foreign Applicants

2 Assessment of application

5 - How would you assess the preparation, feasibility, relevance and schedule of the project in question?

András has a PhD in physical chemistry, but also has a degree (MSc) in biology. Accordingly it can be very much expected that he can actively contribute to the research of the host group working at the Faculty of Medicine at the University of Saarland.

6 - Of what significance is the aspired scholarship to the applicant's academic and professional career and/or to his/her home institution?

Scanning electrochemical microscopy (SECM, the technique to be used according to the workplan) is a relatively new technique. We are always searching for new applications, and this topic might prove to be a new application of SECM. As for the applicant; András has an MSc in biology, and this is a field where he can use his knowledge obtained during his PhD research in a biological topic.

7 - Additional information that could be of importance to the scholarship award decision:

He has defended his PhD dissertation recently with summa cum laude. He is coauthor of 14 scientific papers, in several of them he is the corresponding author. The cumulative impact factor of all those is over 40 and he obtained more than 95 citations. He already has a significant Hirsch-index too.

8 - Degree of approval

Emphatic approval

without concerns approval

Only concerns approval

Pécs, 13-11-2017

Place / Date


Kémiai Intézet

Assessor's signature and stamp

