

AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KRAKOW, POLAND  
UNESCO CENTER FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AND APPLICATIONS OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND

A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

UNESCO/ Poland Co-sponsored Fellowship Programme  
in engineering edition 2013 A (AGH UST)  
Project Proposal for 6 months

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
2013 A dla młodych naukowców w obszarze nauk  
technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

(in English only)

1. Project title: Transportation system telematics  
Field of research: Automation, Transport Engineering, mechatronics, mechanical  
Number of fellowships with free tuition sponsored by UNESCO: 2
2. Name of institution: AGH University of Science and Technology,  
Faculty of Faculty of Mechanical Engineering and Robotics  
.....  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname, title and full contact data of project supervisor:  
prof. dr hab. inż. Janusz Szpytko  
Tel.: +48 12 6173103  
Fax: +48 12 6173531  
E-mail szpytko@agh.edu.pl  
www.agh.edu.pl
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: individual research programme under supervision of tutor (see p.8)
5. Developing countries (specification): UNESCO Member States - Africa, Asia, Pacific Region, Latin America, Carriaribien countries  
.....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary; .....

UNESCO AGH Fellowships 2013 in Engineering

7. Qualifications required: *for example*

*be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally;  
be able to write computer programs for example in C++, ProEngineer, or be familiar  
with Matlab/Simulink, or CA-D/M, FEM, have a general knowledge related to telematic in  
transportation, or construction testing and measurement*

8. Project description (in English):

*project description optional:  
to design and testing in laboratory the intelligent control solutions of selected  
transportation device, to design and testing the measurement systems of selected  
exploitation parameters of selected transportation device, to design and testing telematic  
system of transportation system, to testing and re-design the rail - wheel set laboratory  
stand*

*R&D results:  
improvement in safety and reliability of transportation systems and devices*

*other outputs:  
publications, future projects*

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)

Prof. dr hab. inż. Janusz Szpytko

Dean of the Faculty  
(signature and stamp)

AKADEMIA GÓRNICZO-HUTNICZA  
im. Stanisława Staszycia w Krakowie  
WYDZIAŁ INŻYNIERII  
MECHANICZNEJ I ROBOTYKI  
30-059 Kraków, Al. Mickiewicza 30  
tel (12) 617 51 18 telefax (12) 617 30 99

Place and date: Krakow, February 25, 2013

AKADEMIA GÓRNICZO-HUTNICZA  
im. Stanisława Staszycia w Krakowie  
Wydział Inżynierii Mechanicznej i Robotyki  
ul. M. Skłodowej Curie 30, 30-059 Kraków

Kierownik CMPiE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko

Please return by email using the above format and add formal address please to get a legal and hand signed and stamped copy to the UNESCO Chair office, ul. M. Skłodowej Curie 30, room 207, Kraków 30-059 on 25 February 25, 2013. Thank you for your kindly cooperation

AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY KRAKOW, POLAND  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in  
the developing countries through intensive training and to enhancing international  
understanding and friendship among peoples of the world and the people of Poland

(in English, only)

- 1. Project title: *Problem base engineering*  
Field of research: Decision engineering  
Number of fellowships with free tuition sponsored by UNESCO: 2
- 2. Name of institution: AGH University of Science and Technology,  
Faculty of Faculty of Mechanical Engineering and Robotics  
UNESCO AGH Chair  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
- 3. Name and Surname , title and full contact data of project supervisor:  
prof. dr hab. inż. Janusz Szpytko  
Tel.: +48 12 6173103, 6175109  
Fax: +48 12 6173531, 6175108  
E-mail szpytko@agh.edu.pl  
www.agh.edu.pl
- 4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and  
host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p 8)*
- 5. Developing countries (specification): *UNESCO Member States - Africa, Asia, Pacific Region,  
Latin America, Carriaribien countries*  
.....
- 6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....

UNESCO-CMPTIE Fellowships ed. 2013-14 in Engineering

7. Qualifications required:

*be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally;  
be able to use MS Office and drawing programs, be familiar with CAD/CAE programs, have a general knowledge related to engineering problems*

8. Project description (in English):

*Project description optional:*

*Project refers to creating different type of projects (engineering, higher engineering education, R&D types) in various engineering fields with use problem base learning approach and include different aspects, e.g.: finance, human resources management, industrial psychology, information systems, mathematical modeling and optimization, quality control, operations research, safety and health issues, and environmental management.*

*R&D results:*

*Background for future actions creation.*

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)

Prof. dr hab. inż. Janusz Szpytko

Dean of the Faculty  
(signature and stamp)

prof. dr hab. inż. Antoni Kalukiewicz

Place and date: Krakow, February 25, 2013

AKADEMIA GORNICZO-HUTNICZA  
im. Stanisława Staszica w Krakowie  
ul. Mickiewicza 30, 31-065 Kraków  
tel. (12) 617 51 18

Kierownik CMPTIE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko

AKADEMIA GORNICZO-HUTNICZA  
im. Stanisława Staszica w Krakowie  
WYDZIAŁ INŻYNIERII  
MECHANICZNEJ I ROBOTYKI  
30-059 Kraków, Al. Mickiewicza 30  
tel. (12) 617 51 18 telefax (12) 617 30 99

Prof. dr hab. inż. Janusz Szpytko  
I hereby certify that the enclosed copy is a true and correct copy of the original signed and stamped copy to the UNESCO-CMPTIE AGH-UNESCO office in Krakow, Poland on February 28, 2013.  
Thank you for your kind cooperation.

**AGH University of Science and Technology, KRAKOW, POLAND**  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
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A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

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**technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

**(in English only)**

1. Project title: Analysis of Hydraulic Fracturing Process  
Field of research: Drilling .....  
Number of fellowships with free tuition sponsored by UNESCO: 2 .....
2. Name of institution: AGH University of Science and Technology,  
*Faculty of Drilling, Oil and Gas* .....  
.....  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname , title and full contact data of project supervisor:  
*Dariusz Knez Ph.D* .....  
Tel.: +48 12 6173784.....  
Fax: +48 12 6173784.....  
E-mail [knez@agh.edu.pl](mailto:knez@agh.edu.pl).....  
WWW [www.agh.edu.pl/en](http://www.agh.edu.pl/en).....
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*
5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific)*  
*All regions* .....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....  
Preferably in earth engineering, petroleum or computer sciences.

UNESCO AGH Fellowships ed. 2013-A in Engineering

7. Qualifications required: *for example*

*be proficient in reading and writing in English;*

*be not more than .....45..... years of age; and be in good health, both physically and mentally; others please specify if any .....*

*general knowledge in ...mathematics .....*

8. Project description (in English):

*Fellow will take part in research carried out in Drilling and Geoengineering Department. Hydraulic fracturing method is one of the most important stimulation techniques. In low permeability reservoirs conventional completion methods are not cost effective. Because of significant increase in oil and gas prices such difficult to completion reservoirs become more interesting. In past years hydraulic fracturing was applied as most efficient method to increase oil and gas production from formations like tight sandstone and shale. Successful candidate will work with professional software from leading drilling companies. The goal of research is to find best range of technological factors influencing hydraulic fracturing performance. Computer skills will be an advantage.*

*other outputs:  
research results  
scientific paper*

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)

*[Signature]*

Dean of the Faculty

(signature, and stamp)

Wydziału Wiertnictwa, Nafty i Gazu

*[Signature]*

Prof. dr hab. inż. Andrzej GONET

Place and date: Krakow, February ...25....., 2013

Akademia Górnicza - Hutnicza  
im. Stanisława Staszycy w Krakowie  
Centrum Inżynierii i Techniki  
Technologii i Inżynierii

Kierownik CMPTIE AGH-UNESCO

Prof. dr hab. inż. Jaruzsz Szpytko

Please return via email using both \*.doc format and \*.pdf format – address [unesco@agh.edu.pl](mailto:unesco@agh.edu.pl) and hard signed and stamped copy to the UNESCO AGH Chair office, bld. U2, room 201, hours: 8.00-16.00 till February 28, 2013. 14h00. Thanks a lot for your kindly cooperation.

**AGH University of Science and Technology, KRAKOW, POLAND**  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

**(In English only)**

1. Project title: Drilling and Hydraulic Fracturing Simulation  
Field of research: Drilling .....  
Number of fellowships with free tuition sponsored by UNESCO: 2 .....
2. Name of institution: AGH University of Science and Technology,  
*Faculty of Drilling, Oil and Gas* .....  
.....  
Full address: A.Mickiewicz Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname , title and full contact data of project supervisor:  
*Dariusz Knez Ph.D* .....  
Tel.: +48 12 6173784.....  
Fax: +48 12 6173784.....  
E-mail [knez@agh.edu.pl](mailto:knez@agh.edu.pl).....  
WWW [www.agh.edu.pl/en](http://www.agh.edu.pl/en).....
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor* (see p.8)
5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin-America, Caribbean and Pacific)*  
*All regions* .....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....  
Preferably in earth engineering, petroleum or computer sciences.

# UNESCO AGH Fellowships ed. 2013-A in Engineering

7. Qualifications required: *for example*  
*be proficient in reading and writing in English;*  
*be not more than .....45..... years of age; and be in good health, both physically and*  
*mentally; others please specify if any .....*  
*general knowledge in ...mathematics .....*

8. Project description (in English):

*Fellow will take part in research carried out in Drilling and Geoengineering Department. Successful candidate will write computer program to calculate drilling and hydraulic fracturing parameters. Knowledge of C++ programming language is required. Preferably program will run on any platform, so code has to be easy adaptable to Windows or Linux platform. Windows interface is required.*

*other outputs:*  
*C++ code*  
*scientific paper*

9. Others information: .....

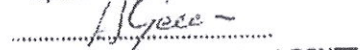
Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)



Dean of the Faculty

(signature and stamp)  
DZIEKAN  
Wydziału Wiertnictwa, Nafty i Gazu

  
Prof. dr hab. inż. Andrzej GONET

Place and date: Krakow, February ...25....., 2013

Al. Mickiewicza 30, 30-059 Kraków  
im. Stanisława Staszycia 20, Kraków  
Centrum Inżynierii Komputerowej  
Technologia i Edukacja AGH - UST  
Al. A. Mickiewicza 30, 30-059 Kraków

Kierownik CMPTIE AGH-UNESCO

  
Prof. dr hab. inż. Janusz Szpytko

Please return via email using both \*.doc format and \*.pdf format – address [unesco@agh.edu.pl](mailto:unesco@agh.edu.pl) and hard signed and stamped copy to the UNESCO AGH Chair office, bld. U2, room 201, hours: 8.00-16.00 till February 28, 2013.

14h00. Thanks a lot for your kindly cooperation.



**AGH University of Science and Technology, KRAKOW, POLAND**  
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EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

1. Project title:

**INTERRELATIONS BETWEEN NEW TECHNOLOGIES AND SOCIAL  
AND ECONOMIC LIFE IN GLOBALIZING WORLD**

Field of research: **economic sociology and economics**

Number of fellowships with free tuition sponsored by UNESCO: **ONE**

2. Name of institution: *AGH University of Science and Technology,  
Faculty of **HUMANITIES***

Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland  
Contact Address: **ul. Gramatyka 8A, 30-071 Krakow, D-13 Hall**

3. Name and Surname, title and full contact data of project supervisor:

*Dr hab. Maria Nawojczyk*

Tel.: +48 12 **617-4380, 617-4345**

Fax: +48 12 **617-4381**

E-mail [maria@list.pl](mailto:maria@list.pl); [maria.nawojczyk@agh.edu.pl](mailto:maria.nawojczyk@agh.edu.pl)

WWW. **wh.agh.edu.pl**

4. Project duration: **6 months**

Proposed starting date: **1.10. 2013** (exact date to be agreed upon by the selected fellows and host Institution)

Language: **English**

Scientific contents: *individual research programme under supervision of tutor* (see page p.8)

5. Developing countries (specification): *UNESCO Member States – Eastern Europe Asia, Africa, Latin America, Caribbean and Pacific*

## UNESCO AGH Fellowships ed. 2013-A in Engineering

6. Academic requirements: Candidates should have a **MA degree in humanities or social sciences or economics.**

7. Qualifications required:

**Documents conforming the MA degree, be proficient in reading and writing in English. If the language of instruction is not the mother tongue of the candidate, a certificate of language proficiency must be provided; be not more than 45 years of age; and be in good health, both physically and mentally.**

8. Project description (in English):

### INTERRELATIONS BETWEEN NEW TECHNOLOGIES AND SOCIAL AND ECONOMIC LIFE IN GLOBALIZING WORLD

New technologies are important forces driving the economic and social transformations. They can be theoretically explored from the position of technological determinism or within a model of interrelated processes of influences between technology and its social and economic environment. These processes vary in scope and speed in different regions of the world as well as due to different economic activities and life styles within one society. Varieties of consequences of these interrelations can be observed on the local and global levels: new social divisions, new distribution of power, new centers of economic development, new social and economic activities, and so on.

Participants of the project would be expected to analyze one particular dimension of the processes mentioned above. They would work within the Department of Economic Sociology and Social Communication of the Faculty of Humanities: participate in the projects developed here, present their findings at the departmental seminars and write a report on the social and economic changes in their own countries as observed from the point of view of the topic presented above.

9. Others information:

Stamp of the AGH UST Faculty

Project Supervisor  
(signature)

*Kawia Nawojczyk*

Place and date: Krakow, 26<sup>th</sup> February, 2013

Dean of the Faculty

(signature *ABZISKAN*)  
Wydziału Humanistycznego

*Janusz Mucha*  
..... Professor Janusz Mucha

Al. Mickiewicza 30, 31-064 Kraków, Kierownik CMPTIE AGH-UNESCO  
in: Stanisław Staszyc w Krakowie  
Centrum i Kierownik CMPTIE AGH-UNESCO  
Prof. dr hab. inż. Janusz Szpytko  
21. 4. 2013 r. godz. 10:00

AGH University of Science and Technology, KRAKOW, POLAND  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND

A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in  
the developing countries through intensive training and to enhancing international  
understanding and friendship among peoples of the world and the people of Poland

(In English only)

1. Project title: Availability problems in transportation systems and devices  
Field of research: Engineering Technology, Transport Engineering, mechatronics  
Number of fellowships with free tuition sponsored by UNESCO: 2
2. Name of institution: AGH University of Science and Technology,  
Faculty of Faculty of Mechanical Engineering and Robotics  
UNESCO AGH Chair  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname, title and full contact data of project supervisor:  
prof. dr hab. inż. Janusz Szpytko  
Tel.: +48 12 6173103, 6175109  
Fax: +48 12 6173531, 6175108  
E-mail szpytko@agh.edu.pl  
www.agh.edu.pl
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and  
host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor* (see p.8)
5. Developing countries (specification): *UNESCO Member States - Africa, Asia, Pacific Region,  
Latin America, Caribbean countries*  
.....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....

7. Qualifications required:

be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally;  
be able to write computer programs for example or be familiar with CAD/ CAM/ CAE programs, have a general knowledge related to transportation problems, including safety and reliability problems

8. Project description (in English):

*project description optional:*  
to design and testing in laboratory the availability of transportation systems and devices, to design the transportation system safety and reliability, to design and testing telematic based system of transportation system  
  
*R&D results:*  
improvement in safety and reliability of transportation systems and devices  
  
*other outputs:*  
publications, future projects

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor

(signature)

Prof. dr hab. inż. Janusz Szpytko

Dean of the Faculty

(signature and stamp)

prof. dr hab. inż. Antoni Kalukiewicz

Place and date: Kraków, February 25, 2013  
im. Stanisława Staszica w Krakowie Kierownik CMPTIE AGH-UNESCO  
Centrum Inżynierii i Robotyki  
Technologii i Robotyki AGH-UST  
Al. A. Mickiewicza 30 30-059 Kraków Prof. dr hab. inż. Janusz Szpytko

AKADEMIA GORNICZO-HUTNICZA  
im. Stanisława Staszica w Krakowie  
WYDZIAŁ INŻYNIERII  
MECHANICZNEJ I ROBOTYKI  
30-059 Kraków Al. Mickiewicza 30  
tel (12) 617 51 18 telefax (12) 617 30 99

The secretary of the committee will send you a copy of the application and hand signed and stamped copy to the UNESCO office in Kraków by 21 hours on 25 February 2013

**AGH University of Science and Technology, KRAKOW, POLAND**  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
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**(in English only)**

1. Project title: Laser. Biotechnology as Innovative Method of Adaptation of Selected Plans to Common Pollutants of the Natural Environment as New Tool for Creation Green Jobs  
Field of research: Environmental Protection Engineering and Biotechnology  
Number of fellowships with free tuition sponsored by UNESCO: 2.

2. Name of institution: AGH University of Science and Technology,  
Faculty of Mining Surveying and Environmental Engineering  
*Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland*

3. Name and Surname, title and full contact data of project supervisor:  
Full prof. Jan W. Dobrowolski, Ph.D., D.Sc., dr.h.c.  
Tel.: +48 12 617 22 53  
Fax:  
E-mail [dobrowol@agh.edu.pl](mailto:dobrowol@agh.edu.pl)  
www: [www: www.agh.edu.pl/en](http://www.agh.edu.pl/en)

4. Project duration: 6 months  
Proposed starting date: 1.10.2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*

# UNESCO AGH Fellowships ed. 2013-A in Engineering

Scientific contents: *individual research programme under supervision of tutor (see p.8)*  
5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa)*

6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary ..basic knowledge in environmental engineering or environmental protection and biotechnology.....

7. Qualifications required: *for example*  
*be proficient in reading and writing in English;*  
*be not more than ...39..... years of age; and be in good health, both physically and mentally; others please specify if any .....*  
*general knowledge in protection of the natural environment and ecoinnovation ....*  
*(environmentally friendly technologies)and interest in promotion sustainable development in home country.....*

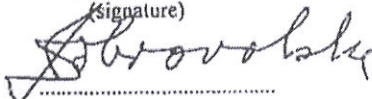
8. Project description (in English):

*R&D results and project description optional (300 words max): The concept of application of Laser biotechnology for more efficient decontamination of the natural environment (by bioremediation of toxic metals and biodegradation of harmful substances-xenobiotics) as well as better reclamation of deteriorated areas and biomass production for bioenergy in areas out of use-was introduced by prof J.W..Dobrowolski from AGH-UST as the Polish priority on international scale. Following long-term laboratory and field experiments carried out by prof. Dobrowolski and his formal diploma and doctoral students the subject of the project would be innovative experimental study in his Laboratory of Laser Biostimulation focused on better adaptation of selected plants to pollutants of soil and water related to selected anthropogenic pollutants (e.g. selected metals and hydrocarbons connected with oil exploitation) and climatic change (salinity of soil). The output of this laboratory study would be useful for reclamation and management some deteriorated areas*

9. Others information: .....Expected result of research-developing studies would be very useful for more efficient management of different region of the home country of candidate as well as for production of biomass (e.g. useful for industry or bioenergy production) not instead of food production. This will be also creative contribution to creation many new Green Jobs as recommended by UNs and UNESCO Green Economy for Sustainable Development all over the world.....

Stamp of the AGH UST Faculty .....

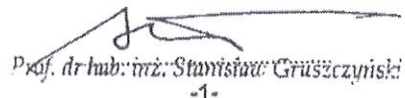
Project Supervisor  
(signature)



Krakow, 25 March....., 2013


*[Faint stamp and text at the bottom left]*

Dean of the Faculty  
(signature and stamp)



Prof. dr hab. inż. Stanisław Gruszczyński

Kierownik CMPTiE AGH-UNESCO



Prof. dr hab. inż. Janusz Szpytko

**AGH University of Science and Technology, KRAKOW, POLAND**  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme  
in Engineering edition 2013 A (AGH UST)**  
Project Proposal for 6 months

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
2013 A dla młodych naukowców w obszarze nauk  
technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in  
the developing countries through intensive training and to enhancing international  
understanding and friendship among peoples of the world and the people of Poland

(in English only)

1. Project title: Drilling Parameters Influence on Injection Performance  
Field of research: Geoengineering .....  
Number of fellowships with free tuition sponsored by UNESCO: 2 .....
2. Name of institution: AGH University of Science and Technology,  
*Faculty of Drilling, Oil and Gas* .....  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname , title and full contact data of project supervisor:  
*Dariusz Knez Ph.D* .....  
Tel.: +48 12 6173784.....  
Fax: +48 12 6173784.....  
E-mail [knez@agh.edu.pl](mailto:knez@agh.edu.pl).....  
WWW [www.agh.edu.pl/en](http://www.agh.edu.pl/en).....
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and  
host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*
5. Developing countries (specification): *UNESCO Member States - please specify countries or  
region (Asia, Africa, Latin America, Caribbean and Pacific)*  
*All regions* .....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....  
Preferably in earth engineering, petroleum or computer sciences.

# UNESCO AGH Fellowships ed. 2013-A in Engineering

## 7. Qualifications required: *for example*

*be proficient in reading and writing in English;  
be not more than .....45..... years of age; and be in good health, both physically and  
mentally; others please specify if any .....  
general knowledge in ...mathematics .....*

## 8. Project description (in English):

*Expanding modern society requires new urban area. From sustainable development point of view the best solution is to make use of existing urban area or new one which is useless for other purposes. In second case quite often ground properties are not suitable for high buildings. Drilling methods are one of the most efficient way of ground modification. Using data, influence of drilling parameters will be investigated. To find best solution new model based on research results is necessary. Successful candidate will work in Drilling and Geoengineering Department laboratory using standard and modern laboratory equipment and software. Computer skills will be an advantage.*

*other outputs:  
research results  
scientific paper*

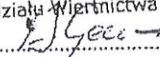
9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)



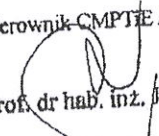
Dean of the Faculty  
(signature and stamp)

Dziękuję  
Wydziały Wiertnictwa, Nafty i Gazu  
  
Prof. dr hab. Inż. Andrzej GONET

Place and date: Krakow, February ...25....., 2013

Aleksander Gorzelski - Młody  
inż. Stanisław Szasziński  
Centrum Kierownictwa i Techniki  
Technologii Wiertnictwa, Nafty i Gazu

Kierownik CMPTE AGH-UNESCO

  
Prof. dr hab. inż. Janusz Szpytko

Please return via email using both \*.doc format and \*.pdf format – address [unesco@agh.edu.pl](mailto:unesco@agh.edu.pl) and hard signed and stamped copy to the UNESCO AGH Chair office. bld. U2, room 201, hours: 8.00-16.00 till February 28, 2013, 14h00. Thanks a lot for your kindly cooperation.



1/10/13

AGH University of Science and Technology, KRAKOW, POLAND  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme  
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Project Proposal for 6 months

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
2013 A dla młodych naukowców w obszarze nauk  
technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

(in English only)

1. Project title: .....Optimising Borehole Heat Exchangers Systems.....  
Field of research: ...Geology and Mining.....  
Number of fellowships with free tuition sponsored by UNESCO: ...2.....

2. Name of institution: AGH University of Science and Technology,  
Faculty of .....Drilling, Oil and Gas..

.....  
Full address: A. Mickiewicza Av. 30, PL 30-059 Krakow, Poland

3. Name and Surname , title and full contact data of project supervisor:

Tomasz Śliwa, PhD, A4 room 114 .....  
Tel.: +48 12 ..617 37 84.....  
Fax: +48 12 ...617 22 06.....  
E-mail .....sliwa@agh.edu.pl.....  
www .....

4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*

5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific)*  
.....all possible.....

6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....M.Sc in Civil Engineering.....  
.....

UNESCO AGH Fellowships ed. 2013-A in Engineering

7. Qualifications required: *for example*  
*be proficient in reading and writing in English;*  
*be not more than 30. years of age; and be in good health, both physically and mentally;*  
*others please specify if any* .....  
*general knowledge in ...mathematic.....*

8. Project description (in English):

*R&D results and project description optional (300 words max):*

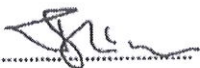
Energy saving is very important around the world. Heat pumps can realize energy saving and renewable energy extraction. Many systems based on borehole heat exchangers (BHE). Constructional and exploitation parameters affect for economical efficiency. The project cover many aspects of borehole heat exchangers. Result of the project is important for all countries, with heat and cold climate. The result is computer software for dimensioning BHEs systems.

*other outputs (100 words max):*  
papers, monograph, ppt presentations

9. Others information: ...work in Geoennergetics Laboratory of Drilling, Oil and Gas Faculty AGH .....

Stamp of the AGH UST Faculty .....

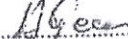
Project Supervisor  
(signature)



Dean of the Faculty

(signature and stamp)

Wydziału Wiertnictwa, Nafty i Gazu



Prof. dr hab. inż. Andrzej GONET

Place and date: Krakow, February 25 2013

Akademia Górniczo-Hutnicza  
im. Stanisława Staszica w Krakowie  
Centrum Inżynierskie i Technologiczne  
Technologia Wiertnictwa, Nafty i Gazu  
Al. A. Mickiewicza 30, 31-064 Kraków

Kierownik CMPTE AGH-UNESCO



Prof. dr hab. inż. Janusz Szpytko

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KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

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Project Proposal for 6 months

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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

**(in English only)**

1. Project title: **Assessment of geotouristic values of selected geological objects**

Field of research: **Geotourism**

Number of fellowships with free tuition sponsored by UNESCO: 1-2

2. Name of institution: AGH University of Science and Technology,  
**Faculty of Geology, Geophysics and Environmental Protection/ Wydział Geologii,  
Geofizyki i Ochrony Środowiska**  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland

3. Name and Surname , title and full contact data of project supervisor:

Prof. dr hab. inż. Tadeusz Słomka

Tel.: +48 12 617 2603

Fax: + 48 12 6334672

E-mail: [tslomka@agh.edu.pl](mailto:tslomka@agh.edu.pl)

[www.agh.edu.pl](http://www.agh.edu.pl)

4. Project duration: 6 months

Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)

Language: English

Scientific contents: *individual research programme under supervision of tutor (see p.8)*

5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific) ALL*

6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....  
B.Sc. or M.Sc. degree in geology, geophysics and environmental protection

# UNESCO AGH Fellowships ed. 2013-A in Engineering

7. Qualifications required: *for example*  
*be proficient in reading and writing in English;*  
*be not more than 40 years of age; and be in good health, both physically and mentally;*  
*others please specify if any* .....  
*general knowledge in Geotourism*

8. Project description (in English):

*R&D results and project description optional (300 words max):*  
*Assessment of geotouristic values of selected geological objects*

*other outputs (100 words max):*  
*conference paper, publication, practical replacement, report*

9. Others information: .....

Stamp of the AGH UST Faculty

AGH UNIVERSITY  
OF SCIENCE AND TECHNOLOGY  
Al. Mickiewicza 30 Ave., 30-059 Krakow  
POLAND

Akademia Górniczo-Hutnicza  
im. Stanisława Staszica w Krakowie  
WYDZIAŁ GEOLOGII, GEOFIZYKI  
I OCHRONY ŚRODOWISKA  
30-059 Kraków, Al. Mickiewicza 30  
tel. (12) 617 36-82; fax (012) 633-29 36  
NIP 675 006 19 23

Project Supervisor

(signature)

RECTOR

AGH University of Science and Technology

Tadeusz Słomka, Prof. D. Sc.

Place and date: Krakow, February 28, 2013

Dean of the Faculty

(signature and stamp)

D. ZEKAN

Prof. dr hab. inż. Adam Piestrzynski

Akademia Górniczo-Hutnicza  
im. Stanisława Staszica w Krakowie  
Centrum Międzynarodowej Promocji  
Technologii i Edukacji AGH - UNESCO  
Al. A. Mickiewicza 30, 30-059 Kraków

Kierownik CMPTIE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko

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KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme  
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Project Proposal for 6 months

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
2013 A dla młodych naukowców w obszarze nauk  
technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

(in English only)

1. Project title: Nanolaminate materials in Ti-Al-C-N system obtained by SHS method.  
Field of research: Materials science and ceramics  
Number of fellowships with free tuition sponsored by UNESCO: 1.
2. Name of institution: AGH University of Science and Technology,  
Faculty of Materials Science and Ceramics  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname, title and full contact data of project supervisor:  
Dr Leszek Chlubny  
Tel.: +48 12617 52 07  
Fax: +48 12 633 15 93  
E-mail leszek@agh.edu.pl  
www www.agh.edu.pl
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*
5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific)*  
.....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....

UNESCO AGH Fellowships ed. 2013-A in Engineering

7. Qualifications required:

*be proficient in reading and writing in English;  
be not more than 35 years of age; and be in good health, both physically and mentally; and  
have general knowledge in chemistry, material science and  
ceramics.....*

8. Project description (in English):

*Research and development of synthesis of nanolaminate MAX-phase materials in Ti-Al-C-N system.*

- *Application of SHS synthesis for obtaining powders of MAX phase materials..*
- *Selection of reaction conditions.*
- *Sintering of MAX phase and optimizations of sintering conditions.*
- *Testing of mechanical, electrical and thermal properties of dense materials.*

*Obtaining of new perspective materials*

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)

Dr Leszek Chlubny

Place and date: Krakow, February 28, 2013

Wydział Inżynierski - Instytut  
Inżynierii Materiałowej i Ceramiki  
ul. Mickiewicza 23, 32-065 Kraków  
Tel: 011 32 235 42 00  
Fax: 011 32 235 42 01

Dean of the Faculty  
(signature and stamp)

Prof. dr hab. inż. Włodzimierz Mozgawa

PRODZIEKAN  
ds. Opóźnień i Nauki

prof. dr hab. inż. Włodzimierz Mozgawa

Kierownik CMPTiE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko

**AGH University of Science and Technology, KRAKOW, POLAND**  
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**EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme**  
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**technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

1. Project title

Influence of some additives on basic parameters of sanitary body or glazes.  
Field of research: ceramic, material engineering, glazes  
Number of fellowships with free tuition sponsored by UNESCO: 1

2. Name of institution: AGH University of Science and Technology,  
*Faculty of Materials Science and Ceramic; Department of Ceramic Technology and Refractory Materials*  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland

3. Name and Surname, title and full contact data of project supervisor:

*Dr inż. Marcin Gajek*  
Tel.: +48 12 .617 5207  
Fax: +48 12 .6331593  
E-mail mgajek@agh.edu.pl  
www.agh.edu.pl

4. Project duration: 6 months

Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)

Language: English

Scientific contents: *individual research programme under supervision of tutor*

5. Developing countries (specification): *UNESCO Member States - (Asia, Africa, Latin America, Caribbean and Pacific)*

6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,

7. Qualifications required:

UNESCO AGH Fellowships ed. 2013-A in Engineering

*be proficient in reading and writing in English;  
be not more than 35 years of age; and be in good health, both physically and mentally;  
general knowledge in ceramic engineering*

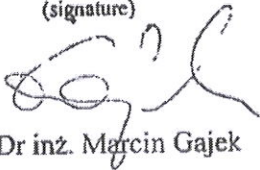
8. Project description (in English):

*Develop new sanitary body or sanitary glazes;  
- designed new ceramic sanitary body or glazes in laboratory,  
- testing obtained materials  
- redesigned obtained materials  
Create new sanitary body or sanitary glazes.*

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)



Dr inż. Marcin Gajek

Place and date: Krakow, February 28, 2013

Academia Górniczo-Hutnicza  
im. Stanisława Staszica  
Katedra Technologii Ceramicznej  
Technologia Ceramicznej  
Al. Mickiewicza 30

Dean of the Faculty  
(signature and stamp)

Prof. dr hab. inż. Włodzimierz Mozgawa

PRODZIEKAN  
ds. Ogólnych i Nauki

Prof. dr hab. inż. Włodzimierz Mozgawa

Kierownik CMPTiE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko



**AGH University of Science and Technology, KRAKOW, POLAND**  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
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E-mail: unesco@agh.edu.pl

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Project Proposal for 6 months**

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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

**(In English only)**

- 1. Project title: Rope based transport operation  
Field of research: Mechanical Engineering  
.....  
Number of fellowships with free tuition sponsored by UNESCO: 1 .....
- 2. Name of institution: AGH University of Science and Technology.  
*Faculty of Mechanical Engineering and Robotics*  
.....  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
- 3. Name and Surname, title and full contact data of project supervisor:  
*Marian Wójcik, Dr hab. Eng.* .....  
Tel.: +48 12 617 3683.....  
Fax: +48 12 636 01 44 .....  
E-mail [marianw@agh.edu.pl](mailto:marianw@agh.edu.pl) .....  
WWW [www.agh.edu.pl/en](http://www.agh.edu.pl/en).....
- 4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*
- 5. Developing countries (specification): *UNESCO Member States - ( Latin America)*  
*All regions* .....

## UNESCO AGH Fellowships ed. 2013-A in Engineering

6 Academic requirements: Candidates should have a B.Sc. or M.Sc. degree, Preferably in mechanical engineering, transportation engineering, rope systems and devices, CAD/ CAM, exploitation, diagnostics.

7. Qualifications required:

*be proficient in reading and writing in English:*

*be not more than .....45..... years of age; and be in good health, both physically and mentally; others .....*

*general knowledge in ...mathematics .....*

8. Project description (in English):

*Dynamics of transport installations*  
*Systems of person rope transport*  
*Exploitation of transport installations*  
*Emergency conditions of transport systems*

*other outputs:*  
*research results*  
*scientific papers, practical training and diagnostics experiences*

9. Others information: .....

Stamp of the AGH UST Faculty

**AKADEMIA GORNICZO-HUTNICZA**  
im. Stanisława Staszica w Krakowie  
**WYDZIAŁ INŻYNIERII**  
**MECHANICZNEJ I ROBOTYKI**  
30-059 Kraków Al. Mickiewicza 30  
tel. (12) 617 51 18 telefax (12) 617 30 99

Project Supervisor

(signature) **W. NIK**  
**KATEDRA TRANSPORTU LINOWEGO**

*Dr hab. inż. Andrzej Nikiel - Zakład AGH*

Dean of the Faculty  
 (signature and stamp)

**DZIEKAN**  
 Wydziału Inżynierii  
 Mechanicznej i Robotyki

Place and date: Krakow, February ...25... 2013

Kierownik CMPTIE AGH-UNESCO  
**Prof. dr hab. inż. Antoni Kalukiewicz**  
 Aleksandra Gończonek - Inżynier  
 im. Stanisława Staszica w Krakowie  
 Centrum Międzynarodowej Promocji  
 Technologicznej i Inżynierskiej AGH-UNESCO  
 ul. A. Mickiewicza 30, 30-059 Kraków

Please return via email using both \*.doc format and \*.pdf format + address the envelope to:  
 stamped copy to the UNESCO AGH Chair office, bld. 1'2, room 201, hours: 8:00-16:00 weekdays  
 14h00. Thanks a lot for your kindly cooperation

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E-mail: unesco@agh.edu.pl

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2013 A dla młodych naukowców w obszarze nauk  
technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

**(in English only)**

1. Project title: Development of control system parallel manipulator based of Assur group of high class  
Field of research: Mechanics, Theory of Machines and Mechanisms, Robotics  
Number of fellowships with free tuition sponsored by UNESCO: 1 (one)
2. Name of institution: AGH University of Science and Technology,  
Faculty of Mechanical Engineering and Robotics,..  
Full address: A. Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname , title and full contact data of project supervisor:  
Jacek Cieřlik, dr hab. inż., prof. AGH.....  
Tel.: +48 12 617 36-63.....  
Fax: +48 12 617 35-05.....  
E-mail [cieslik@agh.edu.pl](mailto:cieslik@agh.edu.pl).....  
WWW <http://www.krim.agh.edu.pl/index.php?faction=pracownicy>
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English (Russian as additional language for communication)  
Scientific contents: individual research programme under supervision of tutor (see p.8)
5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific)*  
Asia,
6. Academic requirements: Candidate should have a B.Sc. or M.Sc. degree in Mechanics, Mathematics or Robotics, Candidate should have an experience in theoretical mechanics, theory of machines and mechanisms, mathematical analysis, robotics

## UNESCO AGH Fellowships ed. 2013-A in Engineering

### 7. Qualifications required:

*be proficient in reading and writing in English (optionally in Russian)  
be not more than 35 years of age; and be in good health, both physically and mentally;  
others: general knowledge in mathematical analysis, physics of solid bodies, mechanics (kinematics and dynamics), theory of machines and mechanisms, robotics,*

### 8. Project description (in English):

**The purpose of work:** development of function and application of management of spatial parallel manipulator package on the base of Assur group of fourth class with six degrees of freedom by dynamic planning and experimental design.

#### Tasks:

- Kinematics synthesis and analysis, decision of reverse task of kinematics of spatial parallel manipulator on the base of Assur group of fourth class with six DOF.
- Dynamic analysis and synthesis of spatial parallel manipulator on the base of Assur group of fourth class with six degrees of freedom.
- Development of operating model of parallel manipulator on the base of Assur group of fourth class with six degrees of freedom.
- Development of function of programmatic management of parallel manipulator on the base of Assur group of fourth class with six degrees of freedom.
- Development of application of management a parallel manipulator package.
- Lead through of imitation experimental design of parallel manipulator on PEVM and by the model of manipulator.

#### The novelty of work is to obtain:

- Method of kinematics and dynamic synthesis of spatial parallel manipulator on the base of mechanisms of higher class.
- Method of synthesis of function management a spatial manipulator on a base numerical symbolic calculations.
- Application of spatial parallel manipulator software working on the base of mechanisms of higher class.

9. Others information: .....

Stamp of the AGH UST Faculty  
im. Stanisława Staszica  
30-059 Kraków, Al. Mickiewicza 30  
Wydział Inżynierii Mechanicznej i Robotyki  
t.1 12 36 21 61/62 533 91 05

Project Supervisor  
(signature)

*Janusz Szpytko*

Akademia Górniczo-Hutnicza Dean of the Faculty  
im. Stanisława Staszica w Krakowie, (signature and stamp)  
Centrum Międzynarodowej Promocji  
Technologii i Edukacji AGH - UNESCO  
Al. A. Mickiewicza 30, 30-059 Kraków

Kierownik C.M.P.T.E AGH-UNESCO

**DZIEKAN**  
Wydziału Inżynierii  
Mechanicznej i Robotyki

*Prof. dr hab. inż. Antoni Kalukiewicz*

Place and date: Krakow, February 27<sup>th</sup> 2013  
Prof. dr hab. inż. Janusz Szpytko

Please return via email using both \*.doc format and \*.pdf format – address [unesco@agh.edu.pl](mailto:unesco@agh.edu.pl) and hard signed and stamped copy to the UNESCO AGH Chair office, bld. U2, room 201, hours: 8.00-16.00 till February 28, 2013, 14h00. Thanks a lot for your kindly cooperation.

AGH University of Science and Technology, KRAKOW, POLAND  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND

A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

UNESCO/ Poland Co-sponsored Fellowship Programme  
in Engineering edition 2013 A (AGH UST)  
Project Proposal for 6 months

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
2013 A dla młodych naukowców w obszarze nauk  
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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in  
the developing countries through intensive training and to enhancing international  
understanding and friendship among peoples of the world and the people of Poland

(in English only)

1. Project title: **Mining and Geology, Environmental Engineering**  
Field of research: **Mining and Geoengineering**  
Number of fellowships with free tuition sponsored by UNESCO: 1-2
2. Name of institution: **AGH University of Science and Technology,  
Faculty of Mining and Geoengineering**  
Full address: **A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland**
3. Name and Surname, title and full contact data of project supervisor:  
**Dr hab. inż. Marek Cala, prof. AGH**  
Tel.: +48 12 617 21 62  
Fax: +48 12 617 37 60  
E-mail: [cala@agh.edu.pl](mailto:cala@agh.edu.pl)  
[www.agh.edu.pl](http://www.agh.edu.pl), [www.gorn.agh.edu.pl](http://www.gorn.agh.edu.pl)
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and  
host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor (see p.8)*
5. Developing countries (specification): *UNESCO Member States - please specify countries or  
region (Asia, Africa, Latin America, Caribbean and Pacific) ALL*
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....  
B.Sc. or M.Sc. degree in mining or environmental engineering
7. Qualifications required: *for example*

## UNESCO AGH Fellowships ed. 2013-A in Engineering

*be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally;  
others please specify if any .....  
general knowledge in mining, geoengineering, environmental engineering*

### 8. Project description (in English):

*R&D results and project description optional (300 words max):*

The project may focus on two optional tasks.

The first one is the application of numerical methods for solving practical problems from the field of geotechnical and rock engineering. The candidate will get familiar with several numerical codes used in underground and open pit mining.

The second one is mine land reclamation. During last 20 years many underground and open-pit mines were closed in Poland. The project will deal with operations for safe mine closing procedures, several strategies of planning of post-mining area reclamation and far range plans for complete area revitalization.

### 9. Others information: .....

Stamp of the AGH UST Faculty

AKADEMIA GÓRNICZO-HUTNICZA  
im. STANISŁAWA STASZICA W KRAKOWIE  
WYDZIAŁ GÓRNICZY I GEOINŻYNIERIA  
30-058 Kraków, Al. Mickiewicza 30  
tel.12-617-21-15; tel./fax 12-423-37-60

Project Supervisor  
(signature)

.....Dr hab. inż. Marek Jęka, prof. AGH.....

Dean of the Faculty  
(signature and stamp)

**DZIEKAN**  
*Piotr Czaja*  
Prof. dr hab. inż. Piotr Czaja

Place and date: Krakow, February 28, 2013

Akademia Górniczo - Hutnicza  
im. Stanisława Staszica w Krakowie  
Centrum Międzynarodowej Promocji  
Technologii i Edukacji AGH - UNESCO  
Al. A. Mickiewicza 30, 30-059 Kraków

Kierownik CMPTIE AGH-UNESCO

*Janusz Szpytko*  
Prof. dr hab. inż. Janusz Szpytko

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J4h06: Thanks a lot for your kindly cooperation

1012

AGH University of Science and Technology, KRAKOW, POLAND  
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EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO AGH Fellowships ed. 2013-B in Engineering  
Project Proposal for 6 months**

**Naukowa oferta stypendialna UNESCO - AGH 2012 B  
dla młodych naukowców z krajów rozwijających**

*UNESCO - AGH 2012 Project B: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland*

**(in English only)**

1. Project title: Reservoir geophysics – combining well log data and laboratory data  
Field of research: petrophysics & well logging & reservoir geophysics  
Number of fellowships with free tuition sponsored by UNESCO: 1

2. Name of institution: *AGH University of Science and Technology,  
Faculty of Geology Geophysics and Environmental Protection, Department of Geophysics*

.....  
Full address: A. Mickiewicz Av. 30, PL 30-059 Krakow, Poland

3. Name and Surname, title and full contact data of project supervisor:

*Prof dr Jadwiga Jarzyna*  
Tel.: +48 12 617 24 21  
Fax: +48 12 6332936  
E-mail jarzyna@agh.edu.pl  
WWW .....

4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor*

5. Developing countries (specification): *UNESCO Member States - Asia, Africa, Latin America, Caribbean and Pacific*

.....  
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree in GEOPHYSICS, APPLIED GEOPHYSICS, PETROLEUM GEOLOGY, GEOLOGY

UNESCO AGH Fellowships ed. 2012-B in Engineering

7. Qualifications required:

*be proficient in reading and writing in English;  
be not more than 35 years of age; and be in good health, both physically and mentally;  
others: ABLE TO WORK IN TEAM  
general knowledge in EARTH SCIENCES, MATHEMATICS, PHYSICS*

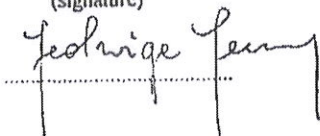
8. Project description (in English):

*Project comprises methods of integrating of various geophysical and geological and petrophysical (lab) data to improve hydrocarbon and water prospection. Well logging and seismics will be the most important methods. Professional Computer systems licensed in AGH UST will be used for processing and interpretation of data. Attention will be focused on including the improved relations between various parameters into modelling of media flow in pore space. The modern Nuclear Magnetic Resonance lab measurements will be included. Preferred results of NMR logging. Seismic attributes will be combined with well log data. Project will be realised on Polish and foreign country data.*

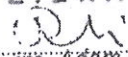
9. Others information:

Stamp of the AGH UST Faculty

Project Supervisor  
(signature)



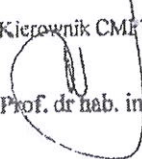
Dean of the Faculty  
(signature and stamp)

DZIEKAN  
  
prof. dr hab. inż. Adam Piestrzyński

Place and date: Krakow, 13.02. 2012

Al. Mickiewicza 30, 30-059 Kraków  
inż. Janusz Szpytko  
Centrum Badawczo-Techniczne  
Technologia i Technologia  
A.A. Usługowa, tel. 12 265 30 00

Kierownik CMETIE AGH-UNESCO

  
Prof. dr hab. inż. Janusz Szpytko



AGH University of Science and Technology, KRAKOW, POLAND  
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 KRAKOW, POLAND  
 A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
 E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme  
 in Engineering edition 2013 A (AGH UST)  
 Project Proposal for 6 months**

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
 2013 A dla młodych naukowców w obszarze nauk  
 technicznych z krajów wzrostu gospodarczego**

UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

1. Project title: Optimization of multistage fracking process in horizontal gas wells in tight and shale reservoirs.  
 Field of research: Reservoir engineering of unconventional resources  
 Number of fellowships with free tuition sponsored by UNESCO: 2.
2. Name of institution: AGH University of Science and Technology,  
 Faculty of Drilling, Oil and Gas  
 Full address: A. Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname, title and full contact data of project supervisor:  
 Stanislaw Nagy, PhD., DSc., P.F.  
 Tel.: +48 12 617 22 09  
 Fax: +48 12 617 22 19  
 E-mail: stanislaw.nagy@agh.edu.pl  
 www: [www: www.agh.edu.pl/en](http://www.agh.edu.pl/en); <http://www.kig.wnafl.agh.edu.pl/en>
4. Project duration: 6 months  
 Proposed starting date: after 1<sup>st</sup> Oktober (exact date to be agreed upon by the selected fellows and host Institution)  
 Language: English, Russian  
 Scientific contents: individual research programme under supervision of tutor (see p.8)
5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific) Asia and Africa (Kazakhstan, Georgia, Ukraine, Uzbekistan, Azerbaijan, Armenia, Malaysia, Philippines, Brunei, Ghana).*
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,
7. Qualifications required: *for example*  
*be proficient in reading and writing in English (Advanced); be not more than 40 years of age; and be in good health, both physically and mentally; others.....*

8. Project description (in English):

Stimulation of the well to increasing low permeability of the reservoir, lies in hydraulic fracturing and the formation of a grid of fractures. A low-viscosity fluid is injected to the well under a high pressure with higher rate that it is expected to flow. The hydraulic resistivity related to the flow in the rock formation increases, the pressure in the well grows above the fracturing pressure making the rock matrix break up and form a fracture or a network of fractures. The important factor stimulating origin of fracture formation is the presence of silica or carbonates in the clayey rocks. The fracture can be protected against its closing by 'proppant'. Some literature analysis reveals that the efficiency of the simulation can be increased by another distribution of fractures, formed by orthogonal positioning of natural and artificial fractures.

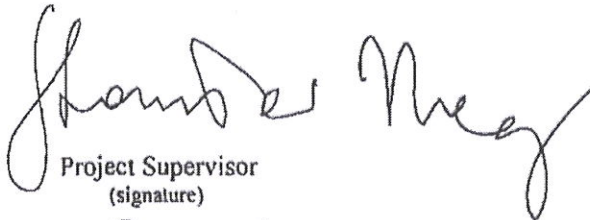
The aim of project is to study of efficiency of possible fracturing process to estimate the best technique for selected geologic conditions. Another goal is to design process without or with minimize amount of hazard substances added into fracturing fluid.

The planned topics:

1. The creation of fracking model for simple case
2. The creation of fracking model for complex geology
3. The build of optimisation model for efficiency of fracking process
4. The systematization of received results.

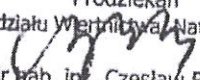
9. Others information:

Stamp of the AGH Faculty

  
Project Supervisor  
(signature)

Feb. 25. 2013



Prodziekan  
Wydziału Wiertnictwa, Nafty i Gazu  
  
dr hab. inż. Czesław Rybicki

Dean of the Faculty  
(signature and stamp)

Kierownik CMPTiB AGH-UNESCO

  
Prof. dr hab. inż. Janusz Szpytiko

AGH University of Science and Technology, KRAKOW, POLAND  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND  
A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme  
in Engineering edition 2013 A (AGH UST)  
Project Proposal for 6 months**

**Naukowa oferta stypendialna Centrum AGH-UNESCO edycja  
2013 A dla młodych naukowców w obszarze nauk  
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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

**(in English only)**

1. Project title: *Smart methodologies for development of software for embedded systems*  
Field of research: Software Engineering  
Number of fellowships with free tuition sponsored by UNESCO: 2
2. Name of institution: AGH University of Science and Technology,  
Wydział Elektrotechniki, Automatyki, Informatyki i Inżynierii Biomedycznej  
Faculty of Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname, title and full contact data of project supervisor:  
prof. dr hab. inż. Tomasz Szmuc  
Tel.: +48 12 6172040  
Fax: +48 12 633-41-99  
E-mail [tsz@agh.edu.pl](mailto:tsz@agh.edu.pl)  
[www.agh.edu.pl](http://www.agh.edu.pl)
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor* (see p.8)
5. Developing countries (specification): *UNESCO Member States - Africa, Asia, Pacific Region, Latin America, Carriaribien countries*  
.....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....

# UNESCO AGH Fellowships ed. 2013-A in Engineering

## 7. Qualifications required:

*be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally;  
good skills in computer engineering, basic knowledge in software engineering, good background in mathematics*

## 8. Project description (in English):

### *project description optional:*

The aim of the project is to incorporate verification methods to support development of correct software for embedded systems. The concept is based on introduction of parallel thread in which systematic verification of developed software artifacts will be carried out.

### *R&D results:*

Modification of existing software development methodology.  
Software modules supporting the verification.

### *other outputs:*

Cooperation with researches working in this area.  
Improvement of knowledge on Polish culture and history.

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)



Prof. dr hab. inż. Tomasz Szmuc

Dean of the Faculty  
(signature and stamp)

DZIEKAN WYDZIAŁU

dr hab. inż. Antoni Cieśla, prof. nadzw.  
dr hab. inż. Antoni Cieśla, prof. n.

Place and date: Krakow, February 25, 2013

Akademia Górniczo - Hutnicza  
ul. Stanisława Staszica w Krakowie  
Centrum Medycyny i Biomechaniki  
Telefon: 011 34 46 50 00  
Al. Mickiewicza 30, 31-064 Kraków

Kierownik CMPTiE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko

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EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
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E-mail: unesco@agh.edu.pl

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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

(In English only)

1. Project title: .

**Axis switching impact on the selected physical properties of magnetite exhibiting first and second order Verwey transition.....**

Field of research: **technical physics**

Number of fellowships with free tuition sponsored by UNESCO: 1.....

2. Name of institution: AGH University of Science and Technology,  
**Faculty of Physics and Applied Computer Science, Faculty of Solid State Physics**  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland

3. Name and Surname , title and full contact data of project supervisor:

**Zbigniew Kąkol, professor.**

Tel.: +48 12 6172007.....

Fax: + (48) 12-423-35-70

E-mail [kakol@agh.edu.pl](mailto:kakol@agh.edu.pl)

www <http://galaxy.uci.agh.edu.pl/~kakol/>

4. Project duration: 6 months

Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)

Language: English

Scientific contents: *individual research programme under supervision of tutor* (see p.8)

5. Developing countries (specification): *UNESCO Member States - please specify countries or region (Asia, Africa, Latin America, Caribbean and Pacific)*

.....**any**.....

6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....

# UNESCO AGH Fellowships ed. 2013-A in Engineering

... B.Sc. or M.Sc. degree in physics, technical physics or material science engineering

7. Qualifications required: *for example*

*be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally; others please specify if any  
general knowledge in Physics*

8. Project description (in English):

*R&D results and project description optional (300 words max):*

At  $T_V \approx 120K$ , magnetite,  $Fe_3O_4$ , undergoes the Verwey phase transition where electrical conduction drops 100 times on cooling, what is associated with the change of lattice symmetry from high-T cubic to monoclinic Cc and with other spectacular anomalies in many physical characteristics. In case the cooling across  $T_V$  is performed in an external magnetic field aligned along one of  $\langle 100 \rangle$  (cubic) directions, this particular direction becomes the monoclinic c axis as well as the easy magnetization axis. If, now, magnetic field is applied below  $T_V$  along some other  $\langle 100 \rangle$  direction, the c (and the easy axis) switches to this direction ("easy axis switching", AS) causing anomalies in magnetization, magnetostriction and some other physical characteristics. The aim of the project is to observe how some of these anomalies triggered by the AS differ in magnetite undergoing the Verwey transition of first (discontinuous) and continuous character (slightly doped with, e.g. Zn).

*other outputs (100 words max):*

Apart from the scientific effects, the scholar will become accustomed with the measurements performed on modern measuring stations, like Quantum Design PPMS, that became a worldwide standard for typical physical properties measurements.

9. Others information: .....

Stamp of the AGH UST Faculty .....

Project Supervisor  
(signature)

*W. J. Janusz Szpytko*

Dean of the Faculty  
(signature and stamp)

*[Signature]*  
D. J. [Signature]

Place and date: Krakow, February 28, 2013

Aleksander in Górniczo - Hutniczo  
im. Stanisława Staszica w Krakowie  
Centrum Fizyczne im. Profesora  
Technologii Materiałów

Kierownik CMPTiE AGH-UNESCO

Prof. dr hab. inż. Janusz Szpytko

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14h00 Thanks a lot for your kindly cooperation.

AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KRAKOW, POLAND  
UNESCO CHAIR FOR SCIENCE, TECHNOLOGY AND ENGINEERING  
EDUCATION AT THE AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
KRAKOW, POLAND

A. Mickiewicza Ave 30, PL 30-059 Krakow, Poland  
E-mail: unesco@agh.edu.pl

**UNESCO/ Poland Co-sponsored Fellowship Programme  
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UNESCO - AGH 2013 Project A in Engineering: promoting human resource capacities in the developing countries through intensive training and to enhancing international understanding and friendship among peoples of the world and the people of Poland

(In English only)

1. Project title: *Transportation technology systems and devices*  
Field of research: Transport engineering, transportation, mechanical engineering, automation, transport and logistic  
Number of fellowships with free tuition sponsored by UNESCO: 2
2. Name of institution: AGH University of Science and Technology,  
Faculty of Faculty of Mechanical Engineering and Robotics  
UNESCO AGH Chair  
Full address: A.Mickiewicza Av. 30, PL 30-059 Krakow, Poland
3. Name and Surname, title and full contact data of project supervisor:  
prof. dr hab. inż. Janusz Szpytko  
Tel.: +48 12 6173103, 6175109  
Fax: +48 12 6173531, 6175108  
E-mail: szpytko@agh.edu.pl  
www.agh.edu.pl
4. Project duration: 6 months  
Proposed starting date: 1.10. 2013 (exact date to be agreed upon by the selected fellows and host Institution)  
Language: English  
Scientific contents: *individual research programme under supervision of tutor* (see p.8)
5. Developing countries (specification): *UNESCO Member States - Africa, Asia, Pacific Region, Latin America, Caribbean countries*  
.....
6. Academic requirements: Candidates should have a B.Sc. or M.Sc. degree,  
please specify in more details if necessary .....

7. Qualifications required:

be proficient in reading and writing in English;  
be not more than 40 years of age; and be in good health, both physically and mentally;  
be able to write computer programs for example or be familiar with CAD/ CAM/ CAE programs, have a general knowledge related to transportation problems, including safety and reliability problems

8. Project description (in English):

project description optional:  
to design and testing in laboratory the availability of transportation systems and devices, to design the transportation system safety and reliability, to design and testing telematic based system of transportation system  
  
R&D results:  
improvement in safety and reliability of transportation systems and devices  
  
other outputs:  
publications, future projects

9. Others information:

Stamp of the AGH UST Faculty

Project Supervisor  
(signature)

Prof. dr hab. inż. Janusz Szpytko

Dean of the Faculty  
(signature and stamp)

prof. dr hab. inż. Antoni Kalukiewicz

Place and date: Krakow, February 25, 2013

AKADEMIA GÓRNICZO-HUTNICZA  
im. Stanisława Staszica w Krakowie  
Centralny Biurowy Zarząd Zakładów  
Technicznych

Kierownik CMPTIE AGH-UNESCO

AKADEMIA GÓRNICZO-HUTNICZA  
im. Stanisława Staszica w Krakowie  
WYDZIAŁ INŻYNIERII  
MECHANICZNEJ I ROBOTYKI  
30-059 Kraków, Al. Mickiewicza 30  
tel (12) 617 51 18, telefax (12) 617 30 95

Prof. dr hab. inż. Janusz Szpytko

At the end of the application, the applicant must sign and stamp the copy of the application form in two places: in the top right corner and in the bottom right corner.