



HORIZON 2020 MSCA-RISE-2017
Project No. 778070

*Transition metal oxides with metastable phases:
A way towards superior ferroic properties*



Wskazówki jak przygotować wniosek

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Instytut Niskich Temperatur i Badań Strukturalnych PAN

Wrocław, 06/02/2020

TransFerr – Konsorcjum



01.12.2017



universidade de aveiro
theoria poiesis praxis

**Helmholtz-Zentrum
Geesthacht**
Centre for Materials and Coastal Research



ILTSR PAS INTiBS PAN, POLAND

VU Vilnius University, LITHUANIA

UA University of Aveiro, PORTUGAL

IOP Institute of Physics of National Academy of Science of UKRAINE

HZG Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH, GERMANY

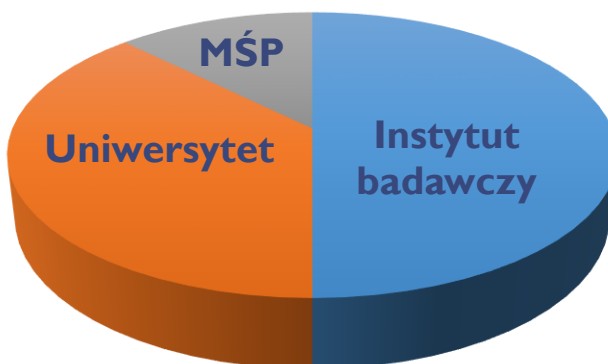
NC Nanoceramics SA, POLAND

FSGSU Francisk Skorina Gomel State University, BELARUS

SPMRC SSPA Scientific and Practical Materials Research Centre of NAS of BELARUS

INSTITUTE OF PHYSICS
National academy of Sciences of Ukraine

Partnerzy konsorcjum



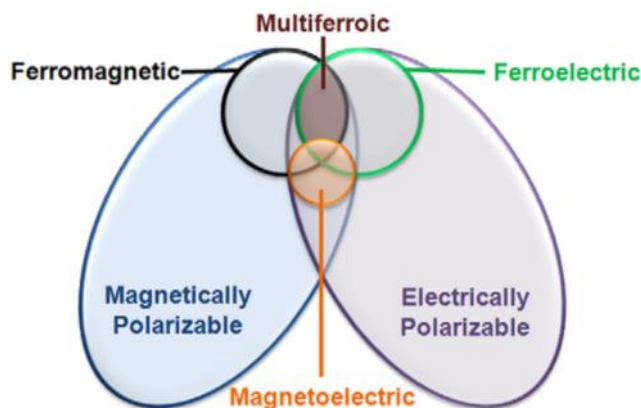
RISE – Research and Innovation Staff Exchange

- *Q: What is the main objective of RISE?*
- A: To promote **international** and **intersectoral** collaboration through research and innovation **staff exchanges**, and sharing of knowledge and ideas from research to market (and vice-versa) for the advancement of science and the development of innovation.
- The proposed research and innovation activities should exploit complementary competences of the participants, as well as other synergies, and enable **networking activities**, organisation of **workshops and conferences** to facilitate sharing of knowledge, **new skills** acquisition and **career development** for research and innovation staff members

- Opracowanie złożonych tlenków metali przejściowych (ferryty, manganiany) o strukturze podobnej do perowskitu o ulepszonych i kontrolowanych właściwościach (multi)ferroicznych.
 - Uzyskać materiały o optymalnym składzie o wyraźnej magnetyzacji, polaryzacji, właściwościach transportowych lub sprzężeniu magnetoelektrycznym.
 - Wykorzystać ich zmniejszoną stabilność strukturalną, aby zwiększyć ich wrażliwość na bodźce zewnętrzne.
 - Zaproponować nowe materiały do zastosowań elektronicznych (czujniki, filtry, elementy pamięci magnetycznej).
- Wykorzystanie wiedzy specjalistów z różnych dziedzin nauki – chemii, inżynierii materiałowej, fizyki teoretycznej i fizyki ciała stałego.
- Utworzenie interdyscyplinarnej sieci zespołów i specjalistów o różnych umiejętnościach, która zapewni efektywny transfer wiedzy i umiejętności.

TransFerr – Zadania (*Work packages*)

Work Package No.	Work Package Title	Lead Beneficiary	Duration months
1	Preparation of manganites and ferrites samples	VU	1 – 36
2	Analysis of crystal and magnetic structure	HZG	3 – 40
3	Investigation of electronic structure of the transition ions and physical properties of the compounds	ILTSR	6 – 42
4	Modeling of the crystal structure and physical properties of the compounds	IOP	8 – 42
5	Evaluation structure-property relationship in doped transition-metal oxides	UA	12 – 42
6	Optimization the samples preparation methods and procedures for up-scaling	NC	18 – 46
7	Knowledge dissemination, transfer of technology and innovations, public engagement	ILTSR	3 – 48
8	Coordination, management and administrative procedures	ILTSR	1 – 48



- Uzyskać czystą fazę związków
- Otrzymać nanokryształy
- Uprościć metodę syntezy
- Wykorzystać niską temperaturę otrzymywania związków



Materiały wykazujące ferroelektryczność i ferromagnetyzm



(RE = La – Sm; M = Mn, Co, Ti; A = Sr, Ca, Ba)



(RE = La – Sm; A = alkali-earth ions; B = Co, Ge, Sb, Al, Cr)

- Reakcje w ciele stałym
- Zol–żel
- Metody samospaleniowe
- Współstrącanie
- Metody solwotermalne
- Termiczna dekompozycja

Martin, L. et al., J. Phys. Cod. Matt., 20 (2008) 434200

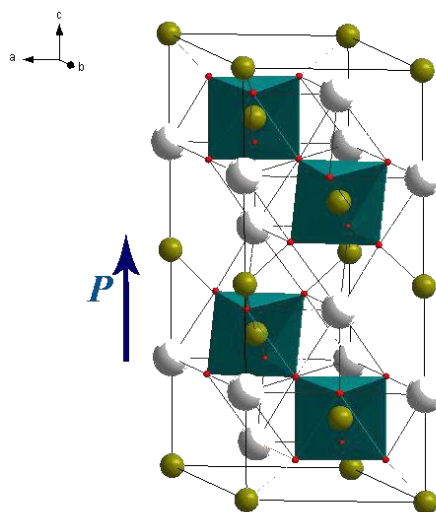
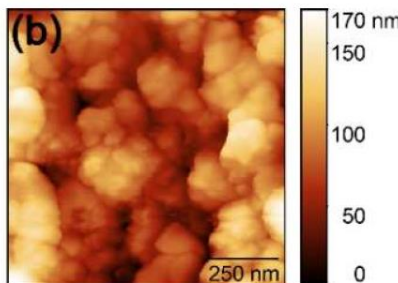
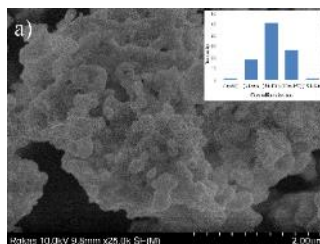
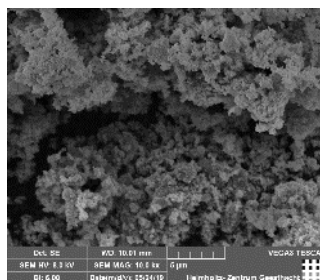
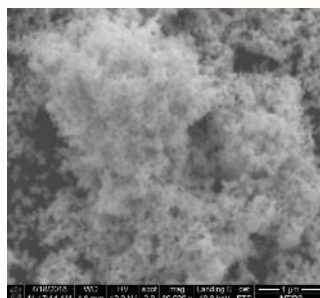
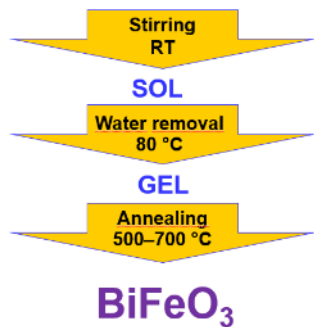
TransFerr – Badania – INTiBS PAN

Sol-gel synthesis scheme

SUBSTRATES
 $\text{Bi}(\text{NO}_3)_3 \cdot 5\text{H}_2\text{O}$ + $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$
 in diluted HNO_3

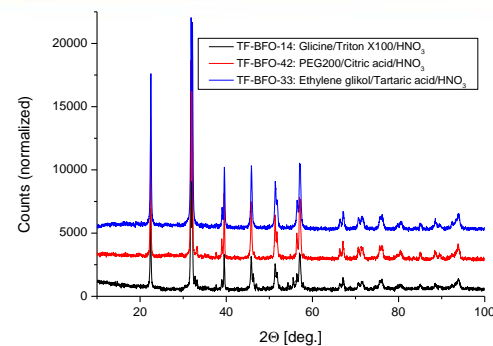
Chelating agent
 (citric acid, EDTA, urea)

Crosslinking agent
 (ethylene glycol, PVP, PVA, PEG)

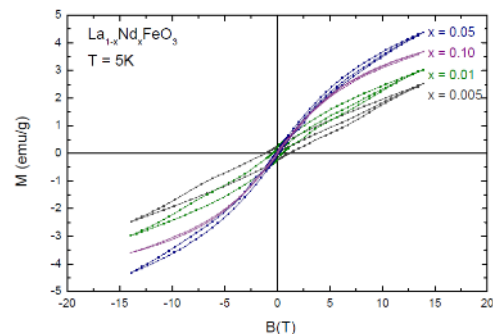
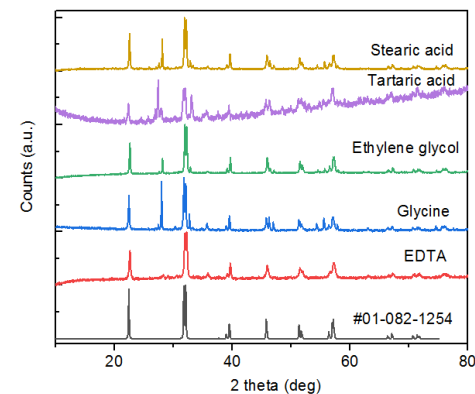


BiFeO_3 – $R\bar{3}c$ space group

SOL-GEL



COMBUSTION



DOBÓR KONSORCJANTÓW

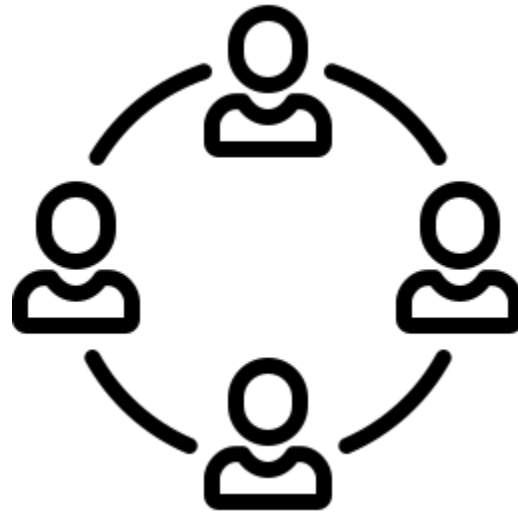


- Wizyty międzysektorowe
 - kraje członkowskie
 - kraje stowarzyszone
- Partnerzy z krajów trzecich
 - uprawnione do finansowania
 - nieuprawnione do finansowania



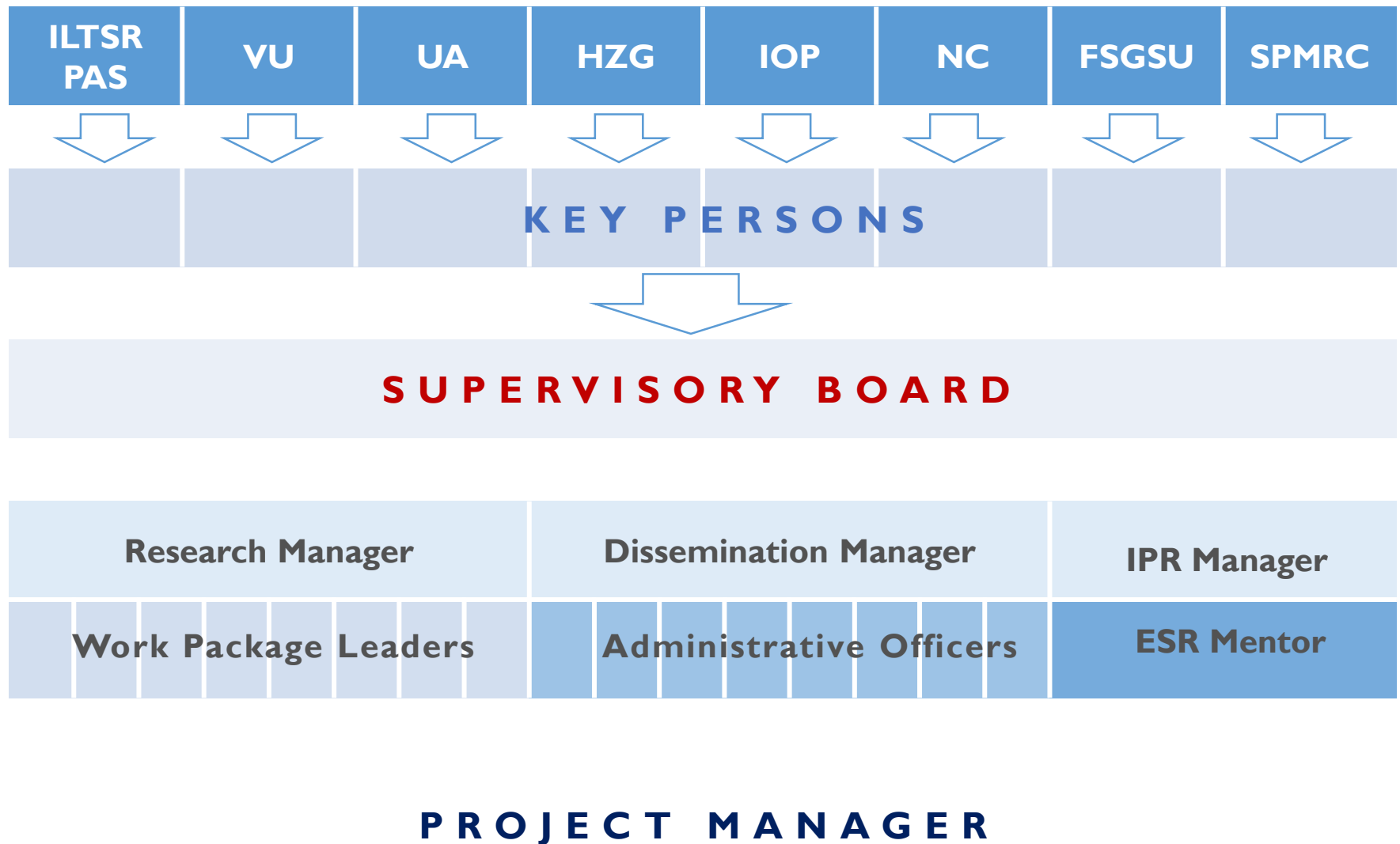
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PRZYGOTOWANIE WNIOSKU



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TransFerr – Zarządzanie



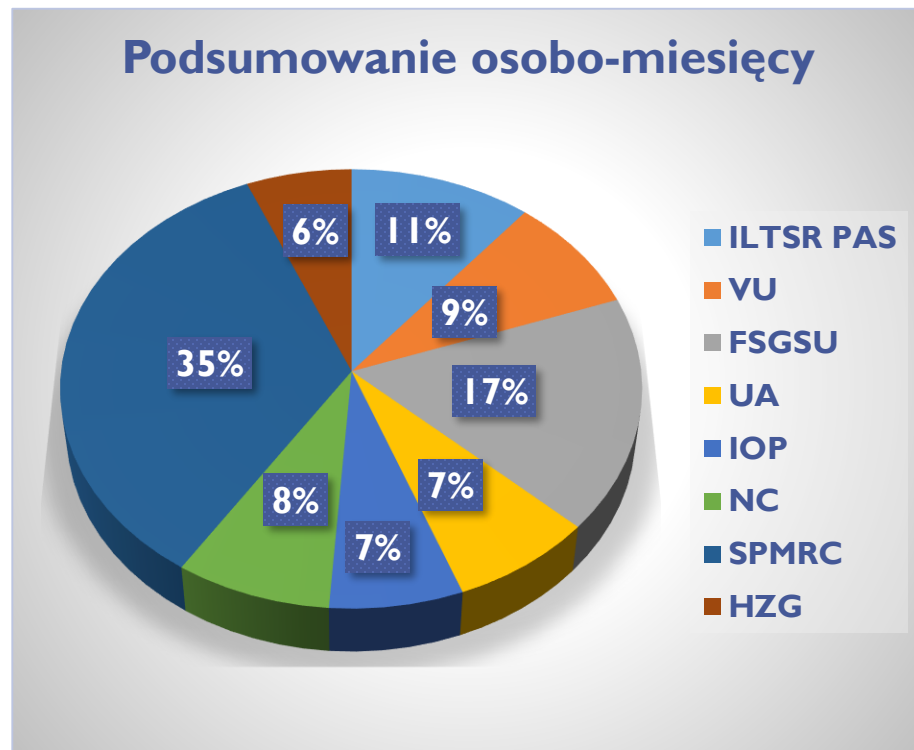
Secondments

[illegible]

Σ 174 Person-Months

Balans ?

Unit	Country	Research Months	Research Months	Research Months
		Period I	Period 2	Overall
ILTSR	Poland	9	10	19
VU	Lithuania	8	7	15
FSGSU	Belarus	16	14	30
UA	Portugal	7	6	13
IOP	Ukraine	5	7	12
NC	Poland	8	6	14
SPMRC	Belarus	33	27	60
HZG	Germany	5	6	11
total		91	83	174



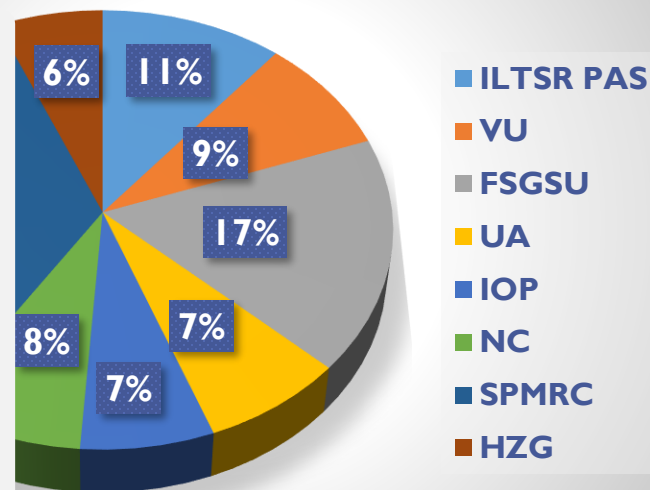
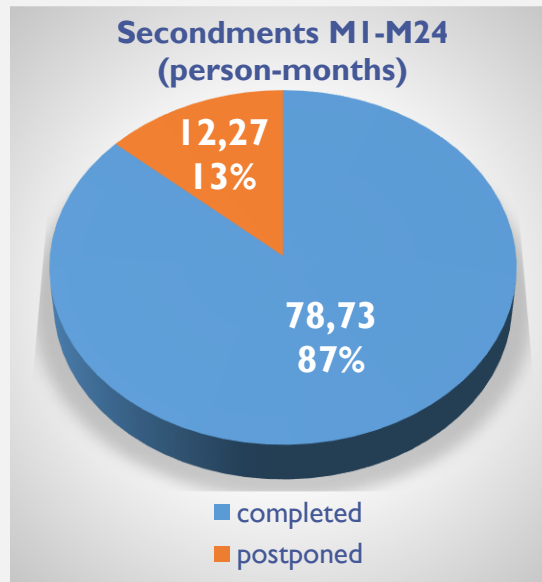
Ograniczenia

czas zasoby ludzkie regulacje prawne

Balans ?

Unit	Country	Research Months	Research Months	Research Months
		Period 1	Period 2	Overall
ILTSR	Poland	9		
VU	Lithuania	8		
FSGSU	Belarus	16		
UA	Portugal	7		
IOP	Ukraine	5		
NC	Poland	8		
SPMRC	Belarus	33		
HZG	Germany	5		
total		91		

Podsumowanie osobo-miesięcy



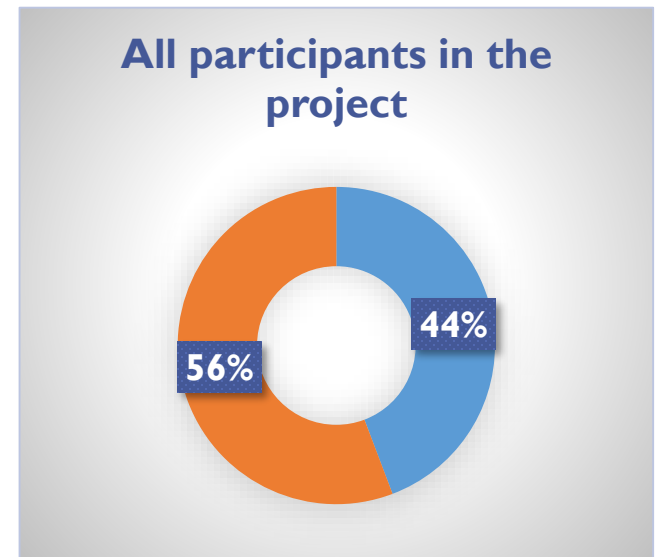
Ograniczenia

czas zasoby ludzkie regulacje prawne

Udział ESR / ER

ESR/ER	Person Months M 1-15	Persons planned to participate in secondments M1-48
ESR	10	23
ER	42	29
total	52	52

- ESR – early stage researcher
- ER – experienced researcher



Deliverables

1.3.2. WT2 list of deliverables

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D1.1	Report on solid state synthesis	WP1	2 - VU	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D1.2	Report on synthesis by sol-gel method	WP1	2 - VU	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D1.3	Report on phase stability regions	WP1	2 - VU	Report	Public	18
D2.1	Report on stoichiometry and crystalline structure	WP2	4 - HZG	Report	Public	24
D2.2	Report on local structure investigations	WP2	4 - HZG	Report	Public	28
D2.3	Report on magnetic structure	WP2	4 - HZG	Report	Public	32
D3.1	Report on electronic and magnetic structure	WP3	1 - ILTSR PAS	Report	Public	38
D3.2	Report on magnetic and dielectric properties	WP3	1 - ILTSR PAS	Report	Public	40
D4.1	Report on analysis of roto-type coupling and correlation between the structure and physicochemical properties	WP4	5 - IOP	Report	Public	42
D5.1	Report on coupling between the structure and physical properties including an effect of external stimuli	WP5	3 - UA	Report	Public	42
D6.1	Report on development of the samples geometry and chemical compositions	WP6	6 - NC	Report	Public	44
D6.2	Report on optimization of the preparation conditions for (pre)industrial level	WP6	6 - NC	Report	Confidential, only for members of the consortium (including the Commission Services)	46
D7.1	Technical data sheets of the developed materials	WP7	1 - ILTSR PAS	Report	Public	40

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D7.2	List of potential companies interested in the project results	WP7	1 - ILTSR PAS	Report	Confidential, only for members of the consortium (including the Commission Services)	46
D7.3	Scientific articles	WP7	1 - ILTSR PAS	Report	Public	48
D7.4	Conference calendar - Part 2	WP7	1 - ILTSR PAS	Report	Public	27
D7.5	Conference calendar - Part 1	WP7	1 - ILTSR PAS	Report	Public	3
D7.6	Presentations or articles available to the general public	WP7	1 - ILTSR PAS	Report	Public	36
D7.7	Patent protection (or patent application) of the new products or production technologies	WP7	1 - ILTSR PAS	Websites, patents filing, etc.	Confidential, only for members of the consortium (including the Commission Services)	48
D8.1	Progress report 1	WP8	1 - ILTSR PAS	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D8.2	Mid-term meeting	WP8	1 - ILTSR PAS	Other	Public	18
D8.3	Progress report 2	WP8	1 - ILTSR PAS	Report	Public	36
D8.4	Final meeting and conference	WP8	1 - ILTSR PAS	Other	Public	48

Upowszechnianie wyników i informowanie

Przykładowe aktywności

- Organisation of a Conference / Workshop / Training
- Participation to a Conference / Workshop / other events
- Press release
- Communication Campaign (e.g. Radio, TV)
- Non-scientific and non-peer-reviewed publication (popularised publication)
- Exhibition
- Flyer
- Website / Social Media
- Video / Film
- Brokerage Event
- Pitch Event
- Trade Fair
- Participation in activities organized jointly with other H2020 projects

Grona odbiorców

- | | | |
|------------------------|------------------|-------------|
| ■ Scientific Community | ■ General Public | ■ Investors |
| ■ Industry | ■ Policy Makers | ■ Customers |
| ■ Civil Society | ■ Media | ■ Other |

TransFerr – Dissemination & communication

WEBSITE

<http://transferr.eu>

SOCIAL MEDIA



<https://www.facebook.com/TRANSFERR.RISE/>

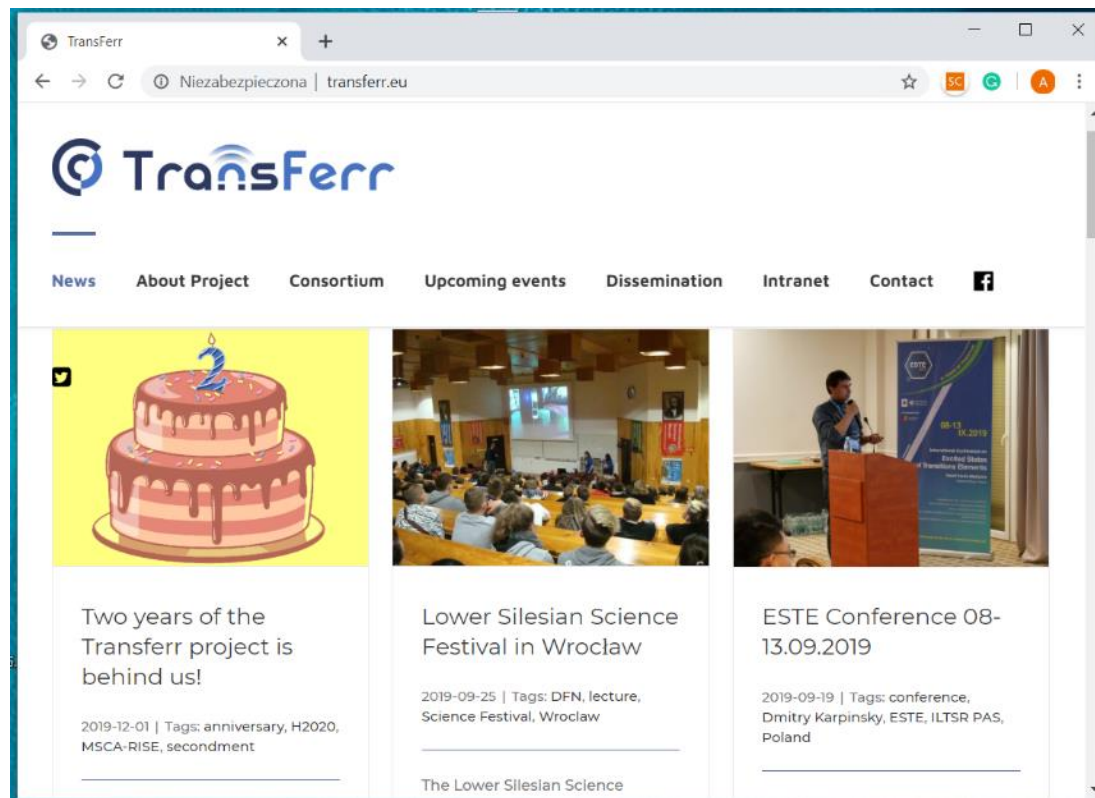


Table 1.2 Confirmed teaching/training activities associated with the *TransFerr* working plan.

Participant	Activity	period
VU	Training in chemical routes synthesis; dielectric and transport properties measurements.	2018
FSGSU	Workshop about sol-gel synthesis routes of nanostructures fabrication;	2018
UA	Workshop for local-scale investigations (AFM, HR-(S)TEM measurements) and Magneto-electric coupling measurements.	2019
HZG	Training in structural investigations using synchrotron and neutron scattering techniques (incl. temperature dependent measurements and measurements in magnetic field).	2019
SPMRC	Teaching of methods and software tools to determine and refine magnetic and crystal structure based on diffraction data.	2018/ 2019
ILTSR	Training “Your Career Development in Science” (for ESR).	2020
IoP	Education and training on theoretical methods to study size effects on physical properties of nanoferroics. Tutoring in theoretical modeling of multiferroic properties and vibrational spectroscopy of surfaces and interfaces.	2019
NC	Trainings in Soft Skills: Project management, Results presentations, IP searching, Product marketing; Training “From Lab to Industry” – How to established Startup company – financial, management and product development aspects.	2018/2 019

Grant Agreement

Grant Agreement number: 778070 — TransFerr — H2020-MSCA-RISE-2017

 Associated with document Ref: Ares(2017)5196772 - 24/10/2017



EUROPEAN COMMISSION
Research Executive Agency

Director



GRANT AGREEMENT

NUMBER — 778070 — TransFerr

This Agreement ('the Agreement') is **between** the following parties:

on the one part,

the **Research Executive Agency (REA)** ('the Agency'), under the powers delegated by the European Commission ('the Commission'), represented for the purposes of signature of this Agreement by Head of Unit, Research Executive Agency, Excellent Science Department, Marie Skłodowska-Curie Research and Innovation Staff Exchanges, Fredrik OLSSON HECTOR,

and

Consortium Agreement / Partnership Agreement

Dostępne wzory, np.

DESCA - Horizon 2020 Model Consortium Agreement

www.DESCA-2020.eu



A LERU model contract for European Training Networks

<https://www.leru.org/news/good-agreements-make-good-friends-a-leru-model-contract-for-european-training-networks>

- Management
- Background
- Results – IPR (IPR issues in GA)
- Payments
- Management Cost
- Third parties

Acronym of the Project Consortium Agreement, version, YYYY-MM-DD

CONSORTIUM AGREEMENT
for a Marie Skłodowska-Curie Innovative Training Network (ITN) European Training Network

THIS CONSORTIUM AGREEMENT is based upon REGULATION (EU) No 1290/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 laying down the rules for the participation and dissemination in "Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020)" (hereinafter referred to as "the Rules"), and the European Commission [H2020 Model Grant Agreement for Marie Skłodowska-Curie Innovative Training Networks \(MSC-ITN-MULTI\)](#) and its Annexes, and is made on <Project start date // other agreed date>, hereinafter referred to as the Effective Date

BETWEEN:

[OFFICIAL NAME OF THE COORDINATOR AS IDENTIFIED IN THE GRANT AGREEMENT],
the Coordinator

[OFFICIAL NAME OF THE PARTY AS IDENTIFIED IN THE GRANT AGREEMENT],

[OFFICIAL NAME OF THE PARTY AS IDENTIFIED IN THE GRANT AGREEMENT],

[Insert identification of other Parties ...]

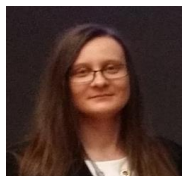
hereinafter, jointly or individually, referred to as "Parties" or "Party"

Grant Agreement

		A. Costs for seconded staff members						B. Institutional costs		Total costs	Reimbursement rate %	Maximum EU contribution ²	Maximum grant amount ³
		B.1. Research, training and networking costs				B2. Management and indirect ⁴ costs							
	Number of units ((person-months))	Form of costs ⁵	Unit		Unit		Unit						
			Costs per unit ⁶	Total a ⁷	Costs per unit ⁶	Total b ⁷	Costs per unit ⁶	Total c ⁷	d = a+b+c	e	f	g	
1. ILTSR PAS	39.00	1. ILTSR PAS	2000.00	78000.00	1800.00	70200.00	700.00	27300.00	175500.00	100.00	175500.00		
2. VU	33.00	2. VU	2000.00	66000.00	1800.00	59400.00	700.00	23100.00	148500.00	100.00	148500.00		
3. UA	29.00	3. UA	2000.00	58000.00	1800.00	52200.00	700.00	20300.00	130500.00	100.00	130500.00		
4. HZG	36.00	4. HZG	2000.00	72000.00	1800.00	64800.00	700.00	25200.00	162000.00	100.00	162000.00		
5. IOP	14.00	5. IOP	2000.00	28000.00	1800.00	25200.00	700.00	9800.00	63000.00	100.00	63000.00		
6. NC	23.00	6. NC	2000.00	46000.00	1800.00	41400.00	700.00	16100.00	103500.00	100.00	103500.00		
Total consortium	174.00	Total consortium		348000.00		313200.00		121800.00	783000.00	100	783000.00	783000.00	

Consortium Agreement

This project has received funding from the European Union's Horizon 2020 research and innovation Programme under the Marie Skłodowska-Curie grant agreement No. 778070



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dr hab. inż. Anna Łukowiak – Project Manager

dr hab. inż. Dariusz Hreniak – ESR Mentor

dr Yuriy Gerasymchuk – Work Package 3 Leader

mgr Robert Tomala (ESR) – Work Package 7 Leader

mgr Katarzyna Lenczewska (ESR) – Dissemination Manager

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