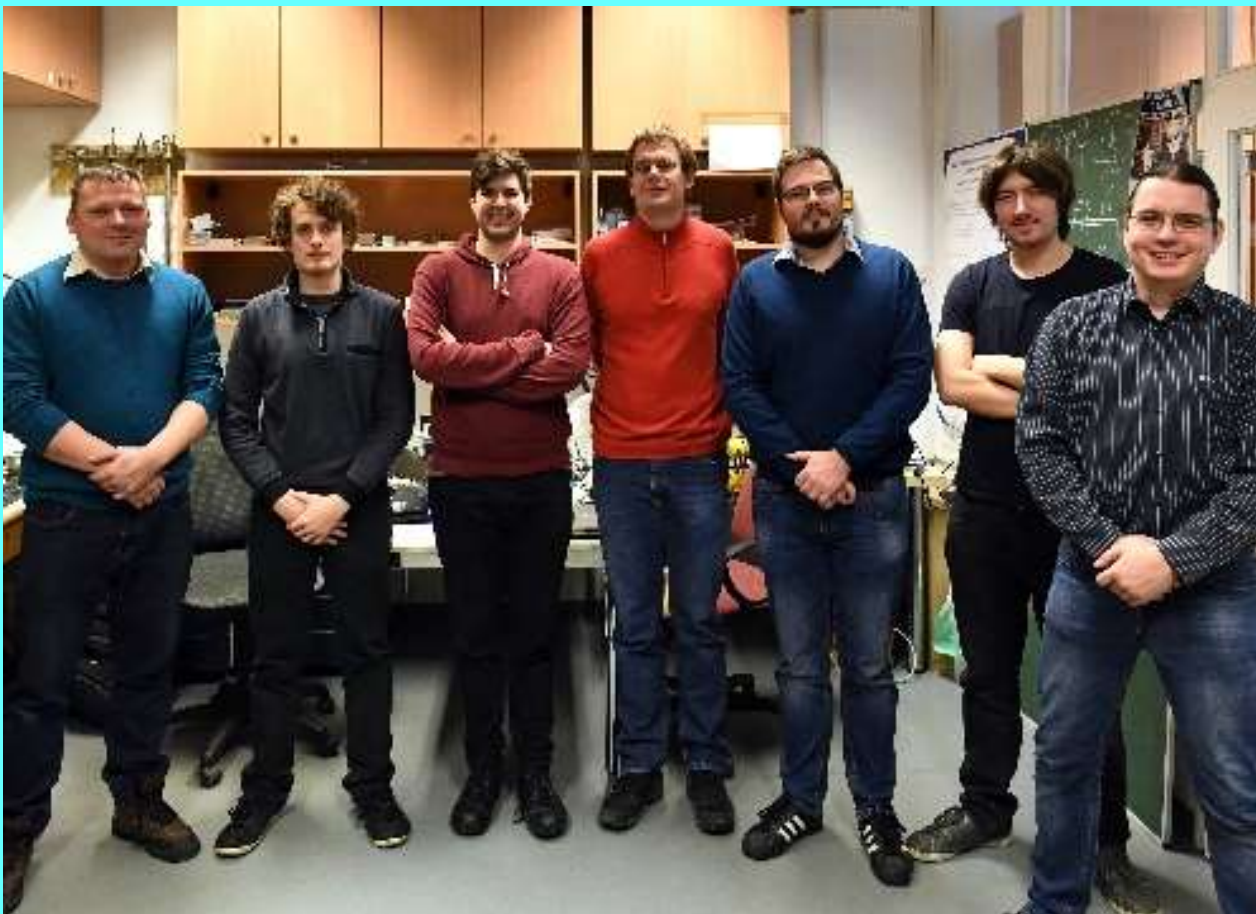


# A spin-spektroszkópai csoport

Simon Ferenc, [simon.ferenc@ttk.bme.hu](mailto:simon.ferenc@ttk.bme.hu)

<https://spintronics.physics.bme.hu/>

<https://www.facebook.com/TheSYLOresearchgroup>



## Témák

### Alap:

- Kvantumbitek fizikája
- Új anyagok kutatása

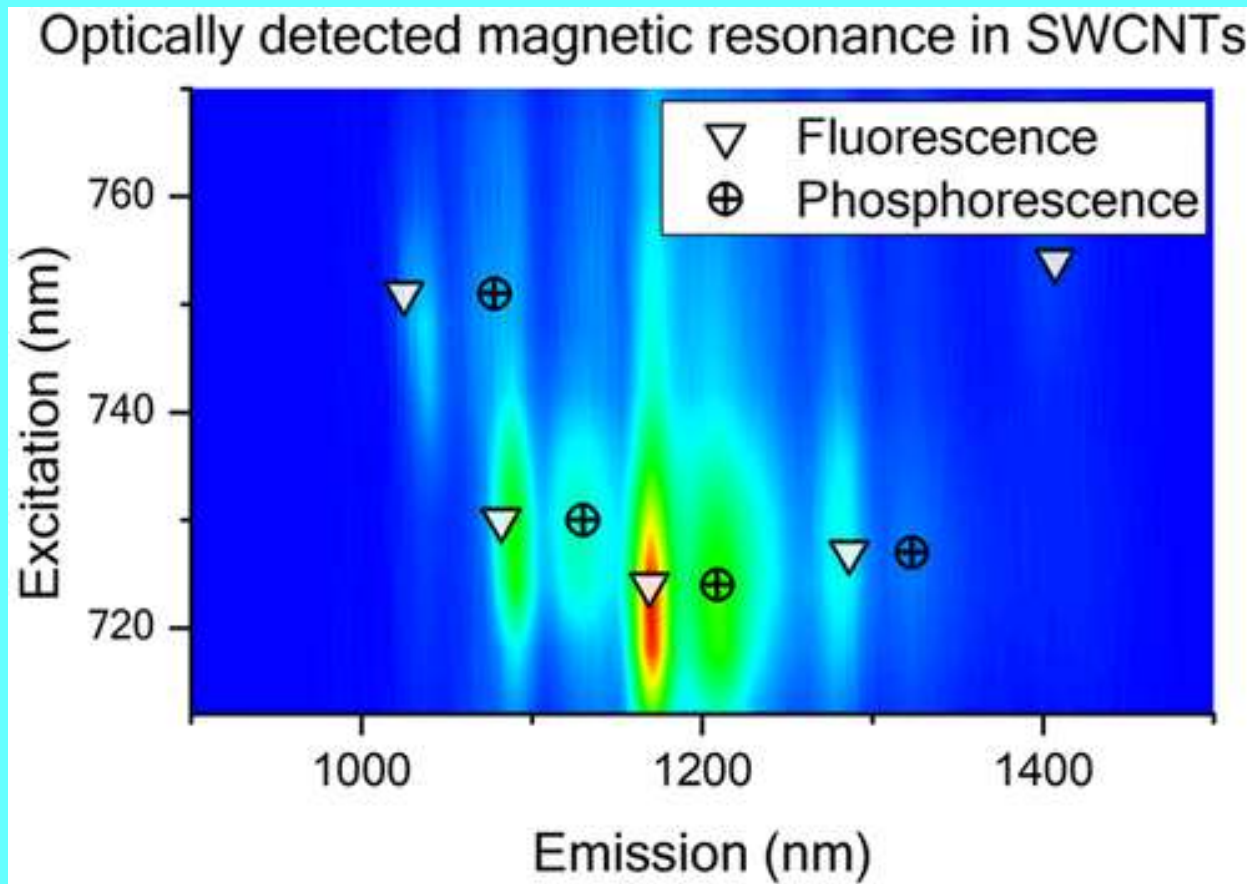
### Alkalmazott:

- Félvezetők – muPCD
- Mágnesség alapjai

# Kvantumbitek fizikája

Szén nanocsövekben fénnel gerjesztett, ún. triplett optikai állapotok mint qubitek  
J. Palotás et al. ACS Nano (2020).

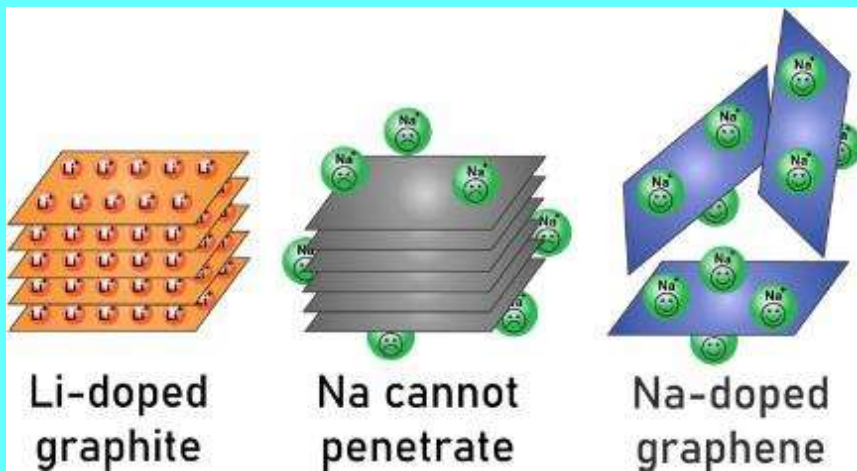
NV centrumok gyémántban, Kollarics et al. Carbon (2022).



Kollaboráció:  
Uni. Wien  
Argonne Nat. Lab.

# Új anyagok kutatása

Na-mal dópolt grafén, Ultrahosszú spin élettartam, B. Márkus et al. ACS Nano (2020).



Kollaboráció:

Uni. Wien

Uni Erlangen

Uni. Madrid

Uni. ND, US

<https://www.kimwan-carbon.com/>

<https://www.pv-magazine.com/>

<https://actu.epfl.ch/>

<https://list.solar/news/graphene-doping/>

Kossuth Rádió 2020-07-23

## Graphene doping a step forward for sodium batteries

Scientists at Switzerland's École Polytechnique Fédérale de Lausanne (EPFL) have developed an anode from graphene doped with sodium, which they say could potentially overcome some of the fundamental issues in increasing storage capacity and the lifetime of sodium-ion batteries.

JUNE 19, 2020 MARK HUTCHINS

ENERGY STORAGE    TECHNOLOGY    TECHNOLOGY AND R&D    EUROPE    SWITZERLAND



EPFL's campus on the shore's of Lake Geneva.

# mu-PCD (Semilab)

Bojtor et al., ACS Photonics (2022).

Kollaboráció:  
Semilab  
Uni-Madrid  
KEP-Techn. (CH)



hvg.hu

2022. augusztus. 11. 08:03 · Utolsó frissítés: 2022. augusztus. 11. 08:58 · TECH

15%-ról 30%-ra is felvihető a napelem  
hatásfoka – magyar kutatók léptek előre a  
megoldásban

# Mágnesség alapjai - nagyfrekvenciás alkalmazásai

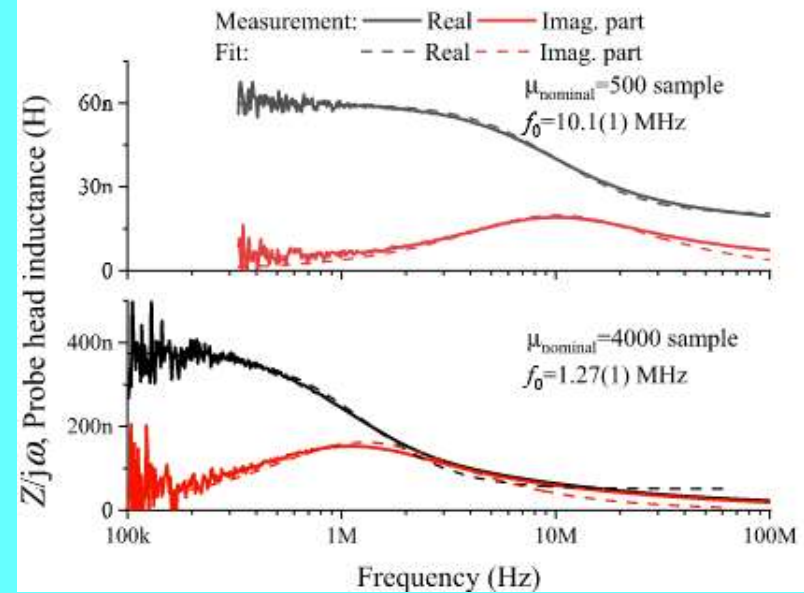
Zámborszky et al. J. Magn. Magn. Mater. (2022)



## High-frequency characterization of Fe-based nanocrystalline cores

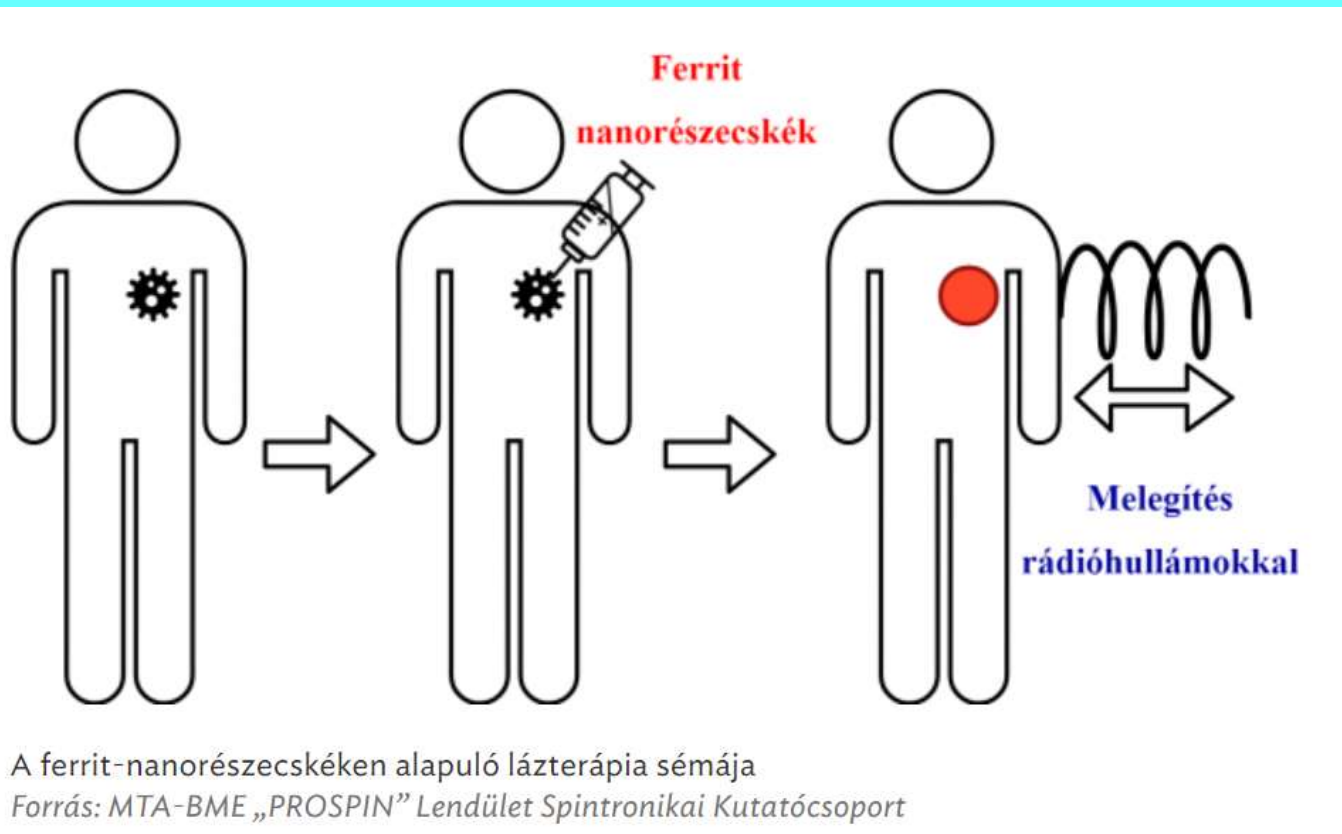
F. Zámborszky <sup>a</sup>, B. Gyüre-Garami <sup>a, b</sup>, B. Jánosi <sup>a</sup>, L. Vajtai <sup>b</sup>, L. Hegyessy <sup>b</sup>, I. Gresits <sup>b</sup>, F. Simon <sup>b, c</sup>

Kollaboráció:  
Robert Bosch  
Magnetec GmbH



# Mágneses hipertermia

Tumorterápia mágneses nanorészecskékkel, orvosi probléma, fizikus megközelítés  
Gresits et al. Scientific Reports (2018)



Kollaboráció:  
SE Biofizika  
DE elmélet  
Uni. Madrid

# Egyebek

Sikeres diákok  
Uni. Notre D

Külföldi tapasztalatok

Stabil pénzügy  
OTKA, MC-E  
V4-Japan

#	Name	Host	Date	Duration	Research goals	Partner	Result
1	Fábrián Gábor	EPFL, Switzerland	7/1/2009	1 month	ESR in intercalated graphite	Prof. Fomó László	MSc Thesis, PRE article
2	Fábrián Gábor	EFM lab, Uni. Wien	7/1/2010	1 month	Raman spectroscopy on SWCNTs, Adaptation of spectrom	Prof. Simon Ferenc, Prof. Thomas Fichtler	RSI article, poster, proceedings
3	Szirmai Péter	EPFL, Switzerland	7/1/2011	1 month	ESR in Li doped SWCNTs	Prof. Fomó László	
4	Györe Balázs	EPFL, Lausanne, Switzerland	7/1/2011	1 month	Experience in Q-band ESR techniques	Prof. Fomó László	
5							
6							
7	Szirmai Péter	EFM lab, Uni. Wien	7/1/2012	1 month	Raman spectroscopy in K doped peapods, Macro Raman	Prof. Thomas Fichtler, Dr. Christian Kramberger	proceedings, MSc Thesis
8	Dzsaber Szami	EFM lab, Uni. Wien	7/1/2012	1 month	Development of an FT-Raman spectrometer	Prof. Thomas Fichtler, Dr. Christian Kramberger	JRS paper
9	Iván Dávid	EPFL, Lausanne, Switzerland	7/1/2012	1 month	In-situ K doping of few-layer graphene	Prof. Fomó László	
10	Szoinoki László	EPFL, Lausanne, Switzerland	7/1/2012	1 month	In-situ K doping of few-layer graphene	Prof. Fomó László	
11							
12	Szirmai Péter	EFM lab, Uni. Wien	7/1/2013	1 month	In-situ K doping of few-layer graphene	Prof. Thomas Fichtler, Dr. Julio Cesar Chacón-Torres	
13	Dzsaber Szami	EFM lab, Uni. Wien	7/1/2013	1 month	Development of an FT-Raman spectrometer	Prof. Thomas Fichtler, Dr. Christian Kramberger	JRS paper
14	Györe Balázs	ITIS/SPEAG, Zürich, Switzerland	7/1/2013	2 months	Improvement of dielectric measurements using open code	Dr. Murányi Ferenc	
15	Szoinoki László	ITIS/SPEAG, Zürich, Switzerland	7/1/2013	2 months	Thermoelectric modeling of the human body	Dr. Murányi Ferenc	
16	Nagydi Milián	Uni. Tübingen, DE	7/15/2013	2 months	Rubidium spectroscopy	Prof. Fortágh József	ITN position
17							
18	Iván Dávid	EPFL, Lausanne, Switzerland	7/1/2014	1 month	ESR based MRI	Prof. Fomó László, Dr. Mabus Péter	
19	Györe Balázs	ICMM CSIC, Madrid, Spain	7/1/2014	1 month	Implementation of microwaves cavity perturbation measure	Dr. Nemes Norbert	TDK
20	Bernáth Benca	EPFL, Lausanne, Switzerland	7/1/2014	1 month	High frequency ESR spectroscopy on potassium doped gr	Prof. Fomó László	
21	Márkus Benca	EFM lab, Uni. Wien	7/1/2014	1 month	In-situ (Raman) K doping of few-layer graphene, investigat	Prof. Thomas Fichtler, Dr. Julio Cesar Chacón-Torres	MSc Thesis, article in preparation, PSSb article
22	Szoinoki László	ITIS/SPEAG, Zürich, Switzerland	7/1/2014	2 months	Thermoelectric modeling of the human body	Dr. Murányi Ferenc	
23	Dzsaber Szami	ITIS/SPEAG, Zürich, Switzerland	7/1/2014	2 months	Improvement of dielectric measurements using open code	Dr. Murányi Ferenc	
24							
25	Agnér Dorina	CBM CNRS, Orleans, France	7/1/2015	1 month	NMR in biomolecules	Prof. Tóth-Jakab Eva	TDK
26	Békés Anna	EPFL, Switzerland	7/1/2015	1 month	EPR imaging in biological sample	Prof. Fomó László, Dr. Mabus Péter	TDK
27	Márkus Benca	EPFL, Switzerland	7/1/2015	1 month	HF-ESR in KCS, ESR in NaLi-FLG	Prof. Fomó László, Dr. Bálint Németh, Péter Szirmai	
28	Szoinoki László	ITIS/SPEAG, Zürich, Switzerland	7/1/2015	2 months	Thermoelectric modeling of the human body	Dr. Murányi Ferenc	
29							
30	Márkus Benca	EPFL, Switzerland	7/1/2016	1 month	ESR studies of carbon based materials	Prof. Fomó László, Dr. Bálint Németh, Péter Szirmai	
31	Garami Anett	EPFL, Switzerland	7/1/2016	1 month	ESR studies of carbon based materials	Prof. Fomó László, Dr. Bálint Németh, Péter Szirmai	
32	Márkus Benca	WEPNM, Kirchberg, Austria	3/1/2016	1 week	poster about alkyl doped SWCNTs	conference	
33	Koltarics Sándor	NTIS, Vienna, Austria	6/1/2016	1 week	poster	conference	
34	Márkus Benca	NTIS, Vienna, Austria	6/1/2016	1 week	poster	conference	
35	Palotás Julianna	NTIS, Vienna, Austria	6/1/2016	1 week	poster	conference	
36	Oktyobovits Zoltán	ITIS/SPEAG, Zürich, Switzerland	7/1/2016	2 months	Thermoelectric modeling of the human body	Dr. Murányi Ferenc	
37	Caček Gábor	ITIS/SPEAG, Zürich, Switzerland	7/1/2016	2 months	Improvement of dielectric measurements using open code	Dr. Murányi Ferenc	
38	Iván Dávid	CBM CNRS, Orleans, France	7/1/2016	1 month	Developing MRI physics	Prof. Tóth-Jakab Eva	
39	Koltarics Sándor	Uni. Tübingen, DE	7/1/2016	1 month	Laser physics developments	Prof. Fortágh József	
40	Palotás Julianna	Uni. Tübingen, DE	7/1/2016	1 month	Broadband Raman spectroscopy	Prof. Fortágh József	
41							
42	Márkus Benca	Uni. Erlangen Nürnberg, DE	7/1/2017	1 month	ESR in functionalized graphene	Dr. Frank Hauke	
43	Márkus Benca	WEPNM, Kirchberg, Austria	3/1/2017	1 week	poster about black phosphorus	conference	
44							
45	Márkus Benca	WEPNM, Kirchberg, Austria	3/1/2018	1 week	poster about black phosphorus	conference	
46	Koltarics Sándor	WEPNM, Kirchberg, Austria	3/1/2018	1 week	poster about CDMR in SWCNTs	conference	
47	Márkus Benca	MPI CPFS Dresden	7/1/2018	1 month	NMR studies of black phosphorus	Dr. Michael Baenitz	
48	Sági Olivér	EPFL, Lausanne, Switzerland	7/1/2018	4 months	high field ESR	Dr. Szirmai Péter, Prof. Fomó László	
49	Bojtor András	Uni. Tübingen, DE	7/1/2018	1 month	Laser physics developments	Prof. Fortágh József	
50	Csász Gábor	EPFL, Lausanne, Switzerland	8/1/2018	1 month	EPR-MR	Dr. Szirmai Péter, Prof. Fomó László	
51	Koltarics Sándor	UCLA, USA	9/1/2018	3 months	time resolved ESR studies	Prof. Károly Holczser	
52							
53	Bojtor András	EPFL, Lausanne, Switzerland	1/1/2019	1 month	PV candidate methylammonia growth and characterization	Dr. Szirmai Péter, Prof. Fomó László	
54	Márkus Benca	WEPNM, Kirchberg, Austria	3/1/2019	1 week	poster about black phosphorus	conference	
55	Bojtor András	EPFL, Lausanne, Switzerland	7/1/2019	1 month	PL candidate methylammonia growth and characterization	Dr. Szirmai Péter, Prof. Fomó László	
56							
57	Koltarics Sándor	WEPNM, Kirchberg, Austria	3/1/2020	1 week	poster about diamond NV	conference	
58	Márkus Benca	WEPNM, Kirchberg, Austria	3/1/2020	1 week	poster about Na doped graphene	conference	
59	Koltarics Sándor	EPFL, Lausanne, Switzerland	8/1/2020	1 month	high field ESR on diamond NV	Prof. Fomó László	
60	Márkus Benca	EPFL, Lausanne, Switzerland	9/1/2020	3 months	high field ESR on diamond NV	Prof. Fomó László	
61							

# A csoportélet





# A csoportélet

