František Staněk, Ph.D.

Personal details: born in Stod, Czech Republic
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Education:

2013 – 2018 Ph.D. in geophysics/seismology
- Charles University, Faculty of Mathematics and Physics
- Thesis: Source mechanisms of microseismic events induced by hydraulic fracturing

2009 – 2012 M.Sc. in applied geophysics
- Charles University, Faculty of Science
- Thesis: Stability of source mechanisms inverted from P-wave amplitudes acquired at the surface

2006 – 2009 B.Sc. in geology
- Charles University, Faculty of Science
- Thesis: Gravity measurements over the Tunnel Valík

Professional Experience in Geosciences:

11/2020 – now Post-doctoral fellow at Colorado School of Mines, Golden, USA
- member of Reservoir Characterization Project (RCP), Dept. of Geophysics
  - fiber-optic sensing (DAS) data analyses
  - microseismic monitoring of hydraulic fracturing
- member of Center for Wave Phenomena (CWP), Dept. of Geophysics
  - cloud computing and machine learning features for DAS data analysis

09/2013 – 10/2020 Geophysical consultant at Seismik Ltd., Prague, Czech Republic
- (re-)processing and interpretation of borehole and surface microseismic datasets
- developing new methods to improve safety and effectivity of reservoir stimulation
- processing of microseismic data in real-time (24/7) during hydraulic fracturing with a responsibility for reporting detected induced events
- reporting to clients on a regular basis as well as personal visits, presenting and discussing results

02/2012 – 10/2020 Research geophysicist at Czech Academy of Sciences, Prague, Czech Republic
- member of dept. of Seismotectonics, Institute of Rock Structure and Mechanics
- (re-)processing and interpretation of surface microseismic datasets
- developing and application of new methods/algorithms
- applying for scientific grants, preparing plans and writing reports
- acquiring field micro-gravimetry and resistivity data, data processing, and interpretation
- cooperation with several international institutions and scientists (UAE, France, Italy, KSA, China)
- writing papers, attending conferences, workshops and seminars

12/2015 - 05/2016 Graduate visiting researcher at The Petroleum Institute (ADNOC), Abu Dhabi, UAE
- evaluating invertability of source mechanisms for receiver arrays used in microseismic monitoring
- installing seismic array for the first hydraulic fracturing experiment in UAE
- assessing microseismic dataset acquired by ADNOC

04/2011 - 07/2011 Intern at Czech Academy of Sciences, Czech Republic / MicroSeismic, Inc., USA
- working on surface data (re-)processing
- developing a source mechanism inversion algorithm

Research Interests:
- modeling synthetic amplitudes, full waveforms; designing optimal monitoring arrays; estimating inversion and uncertainties; (re-)processing of microseismic datasets - detection and location of induced events, source mechanism inversion, stress field inversion and microseismic data interpretation; geomechanics; fiber-optic sensing; cloud computation, machine learning algorithms
- field gravity measurements, data analyzes, modeling, and interpretation

Other activities:

2020 - now	Associate Editor, Geophysics Editorial Board - Passive Seismic and Microseismic Methods
2020 - now	Member of SEG Research Committee
2015 - now	Reviewer of - EAGE and SEG conference abstracts - manuscripts submitted to Geophysics, Geophysical Prospecting, Pure and Applied Geophysics, Geophysical Research Letters and Seismological Research Letters, etc.
2016 - 2018	Vice-president at Charles University in Prague Geophysical Society (SEG Student chapter)
2010 - 2016	Founder & President at Charles University in Prague Geophysical Society (SEG Student chapter) - Main organizer of the 6th International Geosciences Student Conference in Prague, 2015 - The chapter was in 2015 and 2016 evaluated by SEG as one of the best chapters in the World
2009 - 2013	Treasurer at Prague student chapter (EAGE Student chapter)

Memberships in professional societies:

AGU (American Geophysical Union), CAAG (Czech Association of Geophysicists), EAGE (European Association of Geoscientists and Engineers), SEG (Society of Exploration Geophysics), SPE (Society of Petroleum Engineers)

Awards:

Two SEG abstracts in the top 25 papers presented during IMAGE 2021
SEG Annual Meeting Travel Grant, 2014 & 2018
SEG Michael T. Spradley Memorial Scholarship, 2017-2018
AGU Fall Meeting student travel grant, 2017
Short Term Scientific Missions (STSM COST) collaboration grant 2017
SEG/Chevron Scholarship, 2015-2017
SEG/ExxonMobil Student Education Program Travel Grant, 2016
SEG/Chevron Student Leadership Symposium Annual Meeting Travel Grant, 2015
Best Young Geoscientist at IRSM, Czech Academy of Sciences, 2013 & 2014

Languages:

Czech - mother tongue; English - professional working proficiency; French - beginner

Computer skills:

Windows, Linux, Fortran, Matlab, Python, Seismic Unix, software application development
MS Office, Surfer, Grapher, RES2DINV, GM-SYS, basic knowledge of Petrel and Geocluster

Selected publications:

I am a co-author of 15 peer-reviewed papers (10 with Impact Factor) and 20+ conference abstracts.

Staněk, F., Jin, G., and J. Simmons (2022), Fracture Imaging Using DAS Microseismic Events. Accepted to Frontiers of Earth Sciences. doi: 10.3389/feart.2022.907749.

Luo, B., Jin, G., and F. Staněk (2021), Near-field strain in DAS-based microseismic observation, *Geophysics*

Li, L., Tan, J., Schwarz, B., Staněk, F., Poiata, N., et al. (2020), Recent advances and challenges of waveform-based seismic location methods at multiple scales, *Reviews of Geophysics,* 58 (1)

Staněk, F., and L. Eisner (2017), Seismicity Induced by Hydraulic Fracturing in Shales: A Bedding Plane Slip Model. *Journal of Geophysical Research: Solid Earth*, 122. doi: 10.1002/2017JB014213

Staněk, F., Anikiev, D., Valenta, J. and Eisner, L. (2015). Semblance for microseismic event detection. *Geophysical Journal International* (June, 2015), 201 (3): 1362-1369. doi: 10.1093/gji/ggv070

Anikiev, D., Valenta, J., Staněk, F. and Eisner, L. (2014). Joint location and source mechanism inversion of microseismic events: benchmarking on seismicity induced by hydraulic fracturing. *Geophysical Journal International* (July, 2014) 198 (1): 249-258. doi: 10.1093/gji/ggu126

Staněk, F., Eisner, L. and Moser T.J. (2014). Stability of source mechanisms inverted from P-wave amplitude microseismic monitoring data acquired at the surface. *Geophysical Prospecting*, 62: 475–490. doi: 10.1111/1365-2478.12107; also published as SEG Technical Program Expanded Abstracts 2012.

Staněk, F. and Eisner, L. (2013). New model explaining inverted source mechanisms of microseismic events induced by hydraulic fracturing. *SEG Technical Program Expanded Abstracts 2013*.

Patent:

Eisner, L., Staněk, F., and Valenta, J. (2018). Method of using semblance of corrected amplitudes due to source mechanisms for microseismic event detection and location. US Patent 10036819.