

LMU Munich, Earth & Environmental Sciences  
Dr. Bettina Scheu



UMHVERFISSTOFNUN

Hella, 3. september 2014  
Tilvísun: UST20140700164/ie

**Permit to collect samples for geological purpose in Fjallabak Nature Reserve;  
Landmannalaugar area incl. Laugahraun, Námskraun, Norðurnámskraun and  
Hrafnámskraun in August 2014.**

The Environment Agency of Iceland has received a request from Dr. Bettina Scheu, LMU München, Earth- and Environmental Sciences, dated 23.07.2014, regarding a permit to collect samples for geological purpose on the Laugahraun lava field, Námskraun lava field and Norðurnámskraun lava field, as well as on Hrafnámskraun lava field. The sampling is proposed to be done within the days 20<sup>th</sup> to 25<sup>th</sup> of August 2014. Contact in Institute of Earth Sciences, University of Iceland, is Magnús Tumi Guðmundsson Ph.D.

The mentioned lava fields are all located within Fjallabak Nature Reserve. Disturbance to geological formations, vegetation and wild animal life in the protected area is prohibited without permission from the Environment Agency of Iceland. That also includes sampling for scientific research.

The research proposes to map, document and sample in situ textures associated with fracture events at the obsidian lavas at Landmannalaugar area. This will be followed by thorough laboratory analysis of the mapped structures and finalized by experiments aimed at recreating the observed structures under controlled conditions. Constraining the physics of magma welding using natural obsidian is unprecedented but has prodigious grounding in observations of natural volcanic phenomena.

The aim of the research is to study the structure of the obsidian lavas from source to terminus. Therefore the applicants need to walk along the flow axis of these deposits and laterally. At about 4-6 locations along the lava a few hand specimens of the obsidian lava for thermal, textural and mechanical analysis in our laboratory is needed. Soil will be not disturbed, as no digging will be done.

The lava will be slightly disturbed by the planned sampling. To minimize this effect, only manual tools as hammer and chisel (no drill or saw) will be used, and sample the specimen in a manner very similar to the natural way of the lava breaking.

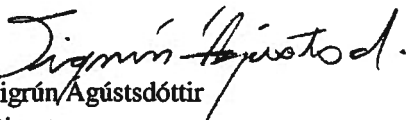
According to the application samples at total up 60 kg of lava, incl. 3-4 bigger pieces of obsidian, will to be taken from the mentioned areas.

The use of the samples will be for scientific purposes only. No commercial exploitation of the samples or the scientific results will be made, nor are such exploitations planned or envisaged. No digging or drilling in the soil will be done.

The Environment Agency of Iceland hereby grants a permission to collect samples for geological purpose with the following conditions:

- This permission is granted for Laugahraun, Námshraun, Norðurnámshraun and Hrafninnuhraun lava fields, from 20<sup>th</sup> to 25<sup>th</sup> of August 2014.
- Sample quantity should be restricted as described above and only used for research purposes.
- Every measure should be taken to avoid unnecessary disturbance to vegetation on site.
- The Environment Agency of Iceland wishes to be provided with, free of charge, a copy of all reports and scientific articles that result from the research project.
- Off road driving, as well as off road parking or U-turns off the road is strictly prohibited.
- If the applicant wishes to transport the samples from Iceland, a permission from the Icelandic Institute of Natural History ([www.ni.is](http://www.ni.is)), e-mail: [ni@ni.is](mailto:ni@ni.is), is needed.

Yours sincerely



Sigrún Agústsdóttir  
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