Replies to Reviewer 3

Regarding *"As a first hint, the English grammar must be improved because it is sometimes barely acceptable"*
English will be checked and corresponding changes made in final version of the paper.

Regarding "*The Author should give more details on the parameters used during the compression tests such as load velocity and so on"*
The average load velocity was $5,7*10^{-4}$ m/s. As it was already mentioned in the text, the maximum load of the press is 500kN, and loading was applied till samples' fracture. All samples were ruptured at different compressive loads.

Regarding *"In the section Experimental procedure the Author declares that the monitoring of EM emissions was held in the frequency range from 10 to 30 kHz. However in the section "Results and discussion" experimental data lower than 10 kHz are found. How is it possible? Is it a misunderstanding? Can the Author rephrase the statement?"*
You are right. There is a mistake in description. The monitoring was held in 20-24000 Hz range.

Regarding "*For the friction and gradual loading experiments the recording of EM signals were carried out by a sound card and Power Graph software. It is known that the frequency detection efficiency depends on sound card type and quality, and also, a band-pass transfer function should be used. Can the Author explain if and how this function was determined?"*
We used antenna amplifier with selected band-pass filter 20 - 30000Hz. Recording was carried on a laptop's sound card with maximum sample rate of 96 kHz (according to the information represented by *Power Graph software*). Moreover we made few test recordings. Sample rate was set to 96 kHz. We found that recorded signal faded rapidly around 22 kHz region. We assume that the sound card we used has a low pass filter.
Regarding "*In Figure 1 the experimental setup is reported. From the diagram it is evident that the electromagnet is placed inside the metallic box. In this way all the EM noises emitted by the device are also detected by the antenna. Is the Author able to quantify these interferences?"*

We were able to register a significant pick every time we switched off the electromagnet. On the attached figure you can clearly see it. At the time of impact the device was de-energized, so no noise related to electromagnet was detected.

Regarding *"In the section 3.1 "Impact", the Author declares that the recorded signals for granite, granodiorite and shale were located in 0-6 kHz frequency range. However in the same section he assesses that at the time of impact on the shale samples, emissions took place in 0-9 kHz frequency range. These statements seem to be incongruent. Could the Author provide more information?"*

Thank you for your remark. It was a misprint. Of course, the 0-6 kHz frequency range is typical for granite and granodiorite only. Corresponding correction will be made in the text.

Regarding *"In the section 3.2 "Gradual loading", the sentence "In a number of cases, EM signals consisted of neighboring pulses groups, among which the main – the strongest impulses, and the series of the numerous weak, but discernible and equispaced peaks." seems to be difficult to understand. Please rephrase the expression."*

and

"Considering that not all the observations are mandatory, the Referee encourages the Author to improve his paper as much as possible based on the comments above."

This one is probably better "In number of cases, EM signals consisted of adjacent pulsed groups: the strongest impulses, and rows of weak equispaced pulses."
The text will be checked one more time before uploading final version of the article.

Regarding "*Furthermore, it is known that some of the problems in the use of antennas are due to a wrong antenna-cable coupling at the junction. These problems can provide numerous false signals if not treated in a suitable way.*
From this point of view, the Author should explain what type of coaxial cable he used (length, impedance, capacitance, etc..) and if it has been evaluated and/or simulated the EM field radiated from the antenna and whether this field would have influenced his experimental measurements. Moreover, due to rapid changes of capacitance between conductors, flexing, twisting or transient impacts on cables could cause electromagnetic

noises in the signal (with a spectrum from few Hz to tens THz). This phenomenon is generally called triboelectric effect. How the Author overcome this problem? Is he able to assess that his experimental observation are not affect by this inconvenience?"

We used double-shielded 75 ohm coaxial cable which was about 0.7 meter long. We haven't made any capacitance measurements. We haven't checked whether EM field radiated from the antenna has influenced the experimental measurements.

Before loading and impact experiments, tests were held. We carried out a recording of EM field to find out if noise, caused by working equipment and other sources, or due to triboelectric effects, could arise. Also we imitated any movements of cables during tests. All equipment, including hydraulic press, was turned on.

I would like to mention that during the experiments all cables were attached to immovable surfaces of press or metal box (in case of impact experiment). We have recorded no noise caused by triboelectric effects. The only noise that was recorded is 50 Hz electrical hum, and its 100 and 150 Hz harmonics. Needless to say, this noise can be filtered.