1. Please take this opportunity to thoroughly proofread the manuscript to ensure that there are no spelling or grammar issues.  
2. Please provide at least 6 keywords or phrases (there are only 4 in your manuscript).

**We provide six keywords in the manuscript : Femtosecond filaments, remote sensing, ultrafast spectroscopy, sub-diffraction-limited imaging, nonlinear optics, laser-induced-breakdown spectroscopy**

3. For in-text referencing, please remove the brackets before and after the reference numbers.

**We remove the brackets before and after the reference numbers.**  
4. Step 1.5: Please write this step in imperative tense as if telling someone how to do the technique.

* 1. **We rewrite this step in imperative tense. It is modified as: *Observe a filament at a location near the geometric focus of the lens. Diagnose filamentation by a diffuse (several-mm-sized) halo surrounding a bright (approximately 100-µm-sized) core. Additionally, observe a characteristic self-phase modulation process in the air, which produces bright, multi-colored conical emission rings that are visible beyond the filament. For lasers with energies which are several times the threshold for filamentation, multiple filaments are observed. These are visible as multiple bright spots in the conical emission pattern, and can be eliminated by attenuation before the iris.***

5. 2.1: Please add more details to your protocol steps. Please ensure you answer the “how” question, i.e., how to set up the stage? Please explain the detail in more sub-steps.

**We re-write the step in detail. It is modified as: *Put a two-axis motorized translation stage capable of moving the sample in the directions transverse to the propagation of the laser beam on the table. Make sure that the laser beam is incident on the center of the stage. Bolt the stage on the table with screws. For laboratory purposes, it is generally easier to keep the laser beam fixed in space while scanning the target under the beam.***6. 2.2: What sample? Please specify. How to prepare the sample?

**The sample is copper, stainless steel, aluminum in the experiment. We specify it in the manuscript as: *Place sand in a container (5 mm X 25.4 mm X 25.4 mm). The thickness of sand is around 2 mm. Put the metal copper, stainless steel, aluminum on the top of sand (Fig. 3(a)). Cover the metals with another 2 mm layer of sand (Fig. 3(b)). With the laser off, put the container in the center of the translation stage. Make sure that the center of container is at the location where filamentation is observed for step 1.1-1.5.***

7. 2.3: How to set up the laser’s computer control?

**We add instruction about how to setup the laser’s computer control. Please look at 2.3 :** ***Set up the laser’s computer control to fire a single shot when electronically commanded. For automated single-shot pulses, an external trigger is required. Connect a trigger TTL pulse to the External Trigger port on the back of the laser control module with a BNC cable. Enable the external trigger option on the laser control module. The TTL pulse will now trigger the laser to fire a single shot.***

8. 2.4: How to set up? Please add in more details so that the readers can replicate your protocol.

**We rewrite 2.4 and give the detail about how to setup the data collection. It is modified as :** ***Set up the appropriate sensor apparatus. Set up the entrance of the spectrometer pointing to the impact point. Use a lens to couple the light from filamentation impact point into a spectrometer (Ocean Optics). The distance between the lens and filamentation is about the focal length. The spectrometer is connected with computer with USB cable. The software is SpectraSuite. Open the software and click on “run” button. Optimize the spectrometer position after you see the signal on the software. For imaging measurements, replace the spectrometer with a photomultiplier tube or a CCD camera.***

***.***  
9. 2.5.1-2.5.3: These steps cannot be filmed unless there is a graphical user interface being used. For steps that are done using software, a step-wise description of software usage must be included in the step. Please mention what button is clicked on in the software, or which menu items need to be selected to perform the step.

**We make our own program use Matlab so that there is no other softwares. We re-write step 2.5 to give the details. It is modified as: *Write a program in Labview or a similar computer language to perform a loop over the following steps: Fire a single shot from the laser; collect and save the resulting data; move the translation stage to the next coordinate point.***

10. Please revise the Discussion to explicitly cover the following in detail in 3-6 paragraphs with citations:  
a) Critical steps within the protocol

**The critical step in the protocol is to generate laser filamentation. We modified the first paragraph on page 5: *The most critical aspect of the protocol is to generate the laser filamentation. To generate the stable laser filamentation, the critical laser intensity is a few 1013W/cm2 and the clamped intensity is around 1.4X1014W/cm2 measured in experiment [12]. There are no laser filamentation when the intensity is either high or low. If the intensity is too high, the medium might be ionized strongly at the focal point and a laser induced break-down will happen. A bright spark instead of a laser filamentation will be observed. In that case, attenuate the power or use a lens with a longer focal length. Conversely, if the power is low (no plasma generation is observed), increase the power or use a lens with short focal length. Moreover, in either case, it is worthwhile to adjust the chirp to help to form a laser filamentation.***

b) Any modifications and troubleshooting of the technique

**The most frequently troubleshooting ot the technique is to generate filamentation. We modified the text to describe the troubleshooting. Please see it in the response 10 (a)**

c) Any limitations of the technique

**We have discussion of the limitation of the technique. Please look at the second paragraph on page 5: *This scanning technique is generally better suited for laboratory use and proof-of-concept rather than field deployment in view of the fact that remote sensing in the field generally does not allow fine translation-stage control of the target under investigation. In those scenarios the same lab-developed laser techniques can be used, but the laser itself will have to be scanned through more traditional beam steering methods such as changing the orientation of the laser apparatus itself.***

d) The significance with respect to existing methods

e) Any future applications of the technique

**We include (d) and (e) in the third paragraph on page 5. It is modified as: *The protocol could be relatively easily extended to involve experiments with multiple filaments, filament bundles, pump-probe experiments, standoff spectroscopy, waveguide, or numerous other possibilities. In each case one of the major experimental hurdles is the alignment of the intersecting focal spots, but with this protocol this need only be done once. The optical elements are fixed in place and the sample itself is the only object required to move, and this can be done very precisely with a translation stage. Further modification of this protocol to achieve further control over the location of the filament formation distance, including filament formation at hundreds of meters from the laser, is possible in principle by careful control of the output laser pulse. Multi-filamentation will also form a waveguide during the propagation, which could help to deliver a light in free space.***

11. Please do not use a table for References.