Cleaning of oil immersion objectives

I would like to present my method for cleaning of my oil immersion objectives here. My method may seem a little unorthodox, but it has worked for at least 15 years with perfect results and without damaging my objectives. I use the following items for cleaning (s. fig. 1):

– ethanol 96% (I use methylated spirit)

– glass cleaner (from the supermarket)

– frequently washed cotton cloth for pre-cleaning

– micro fiber cloth for final cleaning

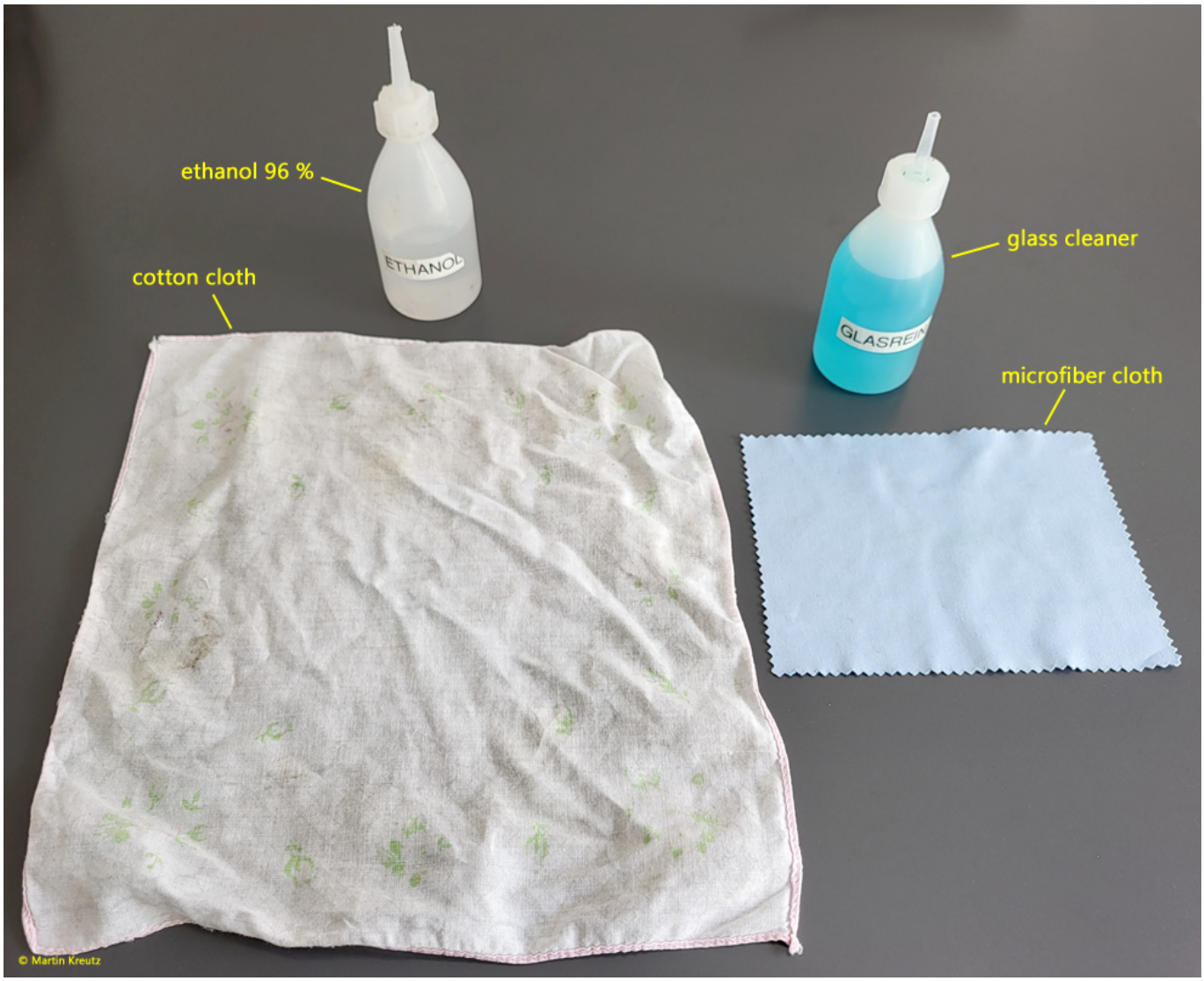


Fig. 1: The solutions and cloth needed for cleaning of immersion objectives.

I will demonstrate this using the example of my 100 X objective, which I clean about every 6 months (s. fig. 2).

Fig. 2: In periods of about 6 months the front lens of the 100 X objective will be cleaned.

At first I remove the largest amount of the oil from the front lens. I moisten the cotton cloth with 1-2 drops of ethanol and wipe the front lens 1-2 times (s. fig. 3 a-b).





Fig. 3 a-b: Pre-cleaning of the front lens with ethanol 96%.

The result of pre-cleaning with ethanol may look rather disappointing (s. fig. 4), as many streaks and drops of oil can be seen. However, the pre-cleaning should only remove the main amount of oil.

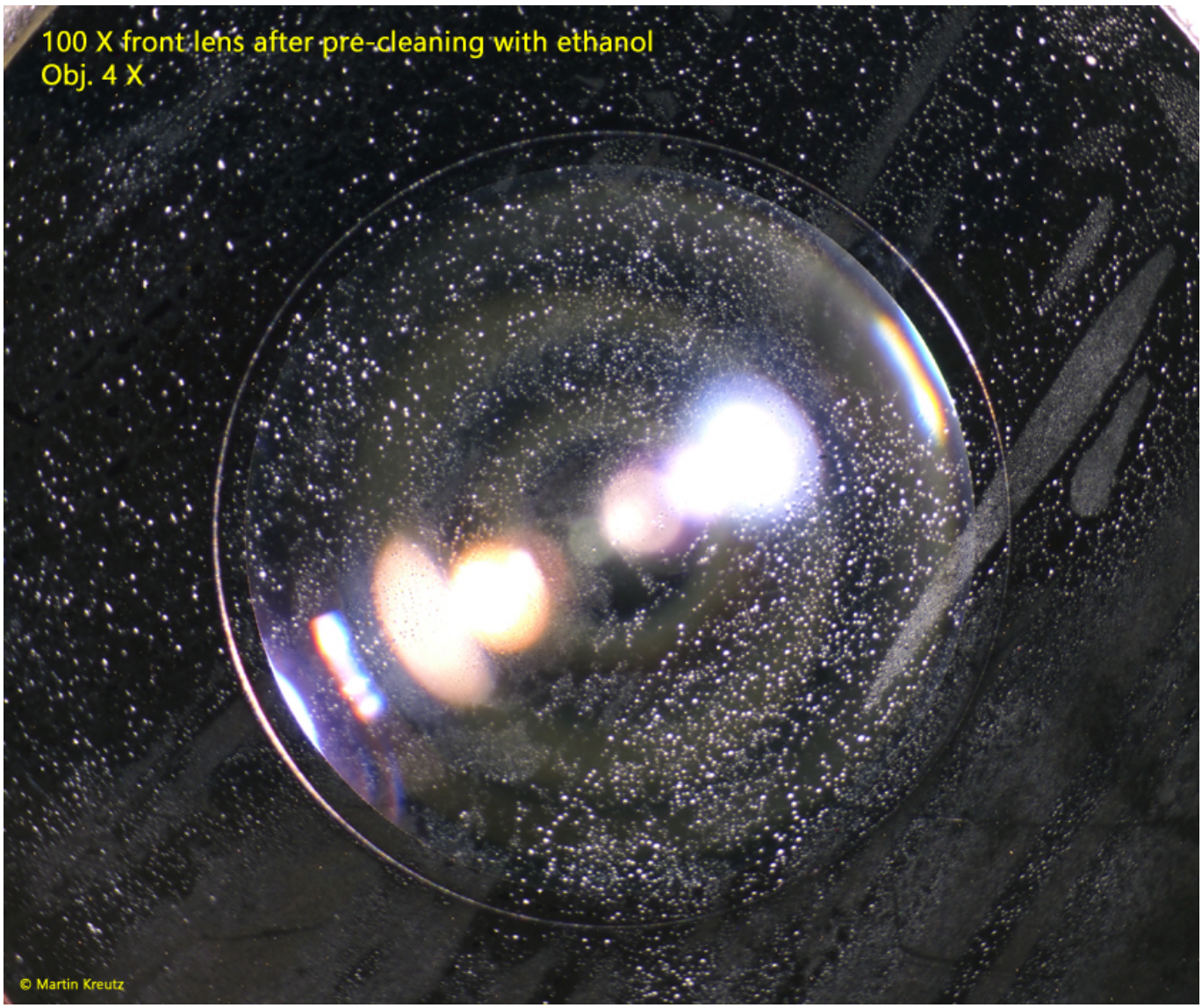


Fig. 4: After pre-cleaning stripes and droplets of oil residues are visible.

Now I moisten the microfiber cloth with 2-3 drops of glass cleaner and wipe over the front lens 2-3 times in one go using light pressure. Avoid rubbing with the cloth at all costs (s. fig. 5 a-c).



Fig. 5 a-c: Final cleaning with few drops of glass cleaner on a microfiber cloth.

As result of the final cleaning all oil residue has been 100% removed and the front lens is completely clean apart from a few tiny dust particles (s. fig. 6). It is not worth removing these as they will be washed away with the new oil. If oil streakes or large dust particles are still visible, the cleaning process can be repeated with the glass cleaner. The whole process takes about 5 minutes. I usually leave the objective in the nose piece for cleaning.

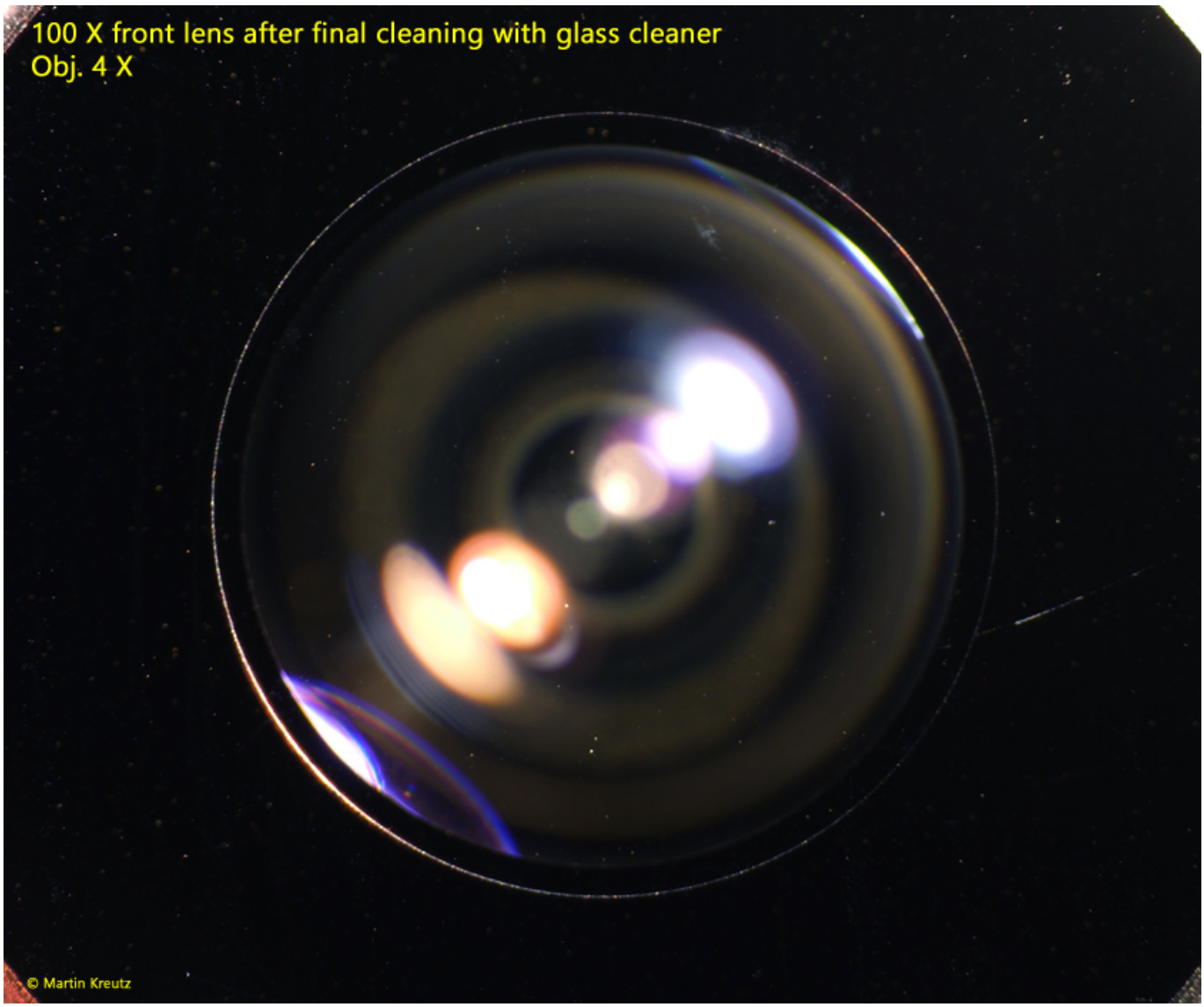


Fig. 6: After final cleaning all oil residues are removed and only tiny dust particles are visible.