

## Smartphone Spectroscope Assembly

1. Remove carriage bolts from scope clip as shown in Fig. 1A, and replace on opposite side of clip base as illustrated in Fig 1B. Secure bolts with nylon wing nuts.
2. Install scope to clip base using carriage bolt and wing nut as illustrated in Fig. 2. All carriage bolts should be facing the same direction. The scope is attached to the opposite side of the clip base as shown in figure.
3. Attach the spectroscope to a smartphone by sliding the phone through the adjustable clips (Fig. 3).
4. Align scope view port to phone camera (Fig. 4). The scope slit should be to the far right when viewing the scope as illustrated in Fig. 4.

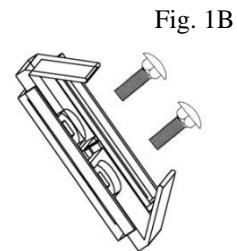
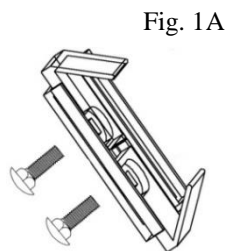


Fig. 2

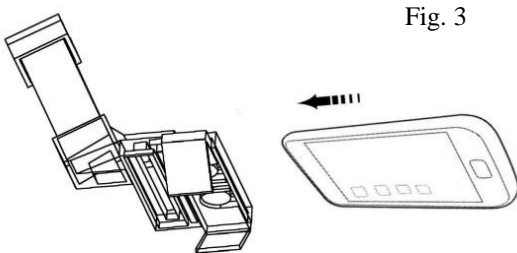
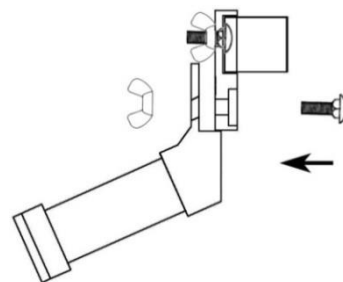


Fig. 3

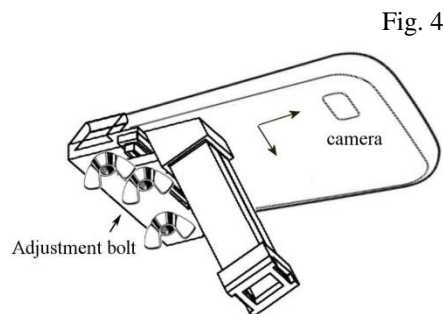


Fig. 4

## Spectroscope Calibration

1. Install and open *CamAtom* from Google Play or iTunes as applicable to smartphone type.
2. Expose the spectroscope to a continuum light source, such as an incandescent bulb or indirect sunlight.
3. Adjust the adjustment bolt so that the image of a rainbow appears above the wavelength scale.
4. Adjust the zoom so that the rainbow spans approximately between 400 and 700 nm.
5. Expose the spectroscope to a line source, either a fluorescent bulb or mercury source.
6. Toggle to the appropriate reference spectrum in the app, and align observed emission lines with reference lines by adjusting the zoom and slit (if necessary).
7. Toggle reference button to obtain wavelength scale. The scope is now calibrated, touch screen to obtain wavelength.

Instructional videos are found at [www.kissinstruments.com](http://www.kissinstruments.com)