Case for Using UV-LEDs

Based on the below findings, I suggest using UV-LED spectroscopy since there is a larger range of emitted radiation. However, the addition of an IR-LED for better fingerprinting of compounds, especially for non-dissolving compounds, is desirable and can be used in conjunction with UV-LEDs. For starting this project, I recommend UV-LEDs because they also require less specialized equipment (no IR filter on a camera, etc.).

1. UV has a larger reflectivity range than IR (200-800nm for UV vs 2.5-50pm for IR). This means that there is more range and larger reflectivity/absorption dips in a spectrophotometer graph from UV.
   https://www.itwreagents.com/united-states/en/sa_spectroscopy-uv-vis-ir
   http://social.ocr.org.uk/files/ocr/An%20Introduction%20to%20Infrared%20and%20UV-Visible%20Spectroscopy.ppt
2. Could be worth having both a UV and IR LED for "fingerprinting" compounds. Different bonds are affected by UV and IR and many compounds don't show noticeable UV absorption.
   https://www.quora.com/How-does-infrared-spectroscopy-differ-from-UV-visible-spectrophotometry
3. Absorption of compounds can change between ranges based on temperature.
   https://www.ncbi.nlm.nih.gov/pubmed/1146488
4. Solids can have reflectivity measured as well (diffuse reflectance spectroscopy).
   https://www.sciencedirect.com/topics/medicine-and-dentistry/diffuse-reflectance-spectroscopy
5. Solutions are affected by temperature but don't have any anisotropic properties: not affected by direction of measurement.
   https://www.tandfonline.com/doi/abs/10.1080/00387018208068002?journalCode=lstl20