

MinPlotX - a new powerful tool for mineral formula recalculation and visualization

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Modern analytical techniques, such as Electron Probe Microanalysis (EPMA), are essential for studies in mineralogy, petrology, volcanology, and economic geology. The growing accessibility of in situ mineral chemical analysis has led to an increase in the number of studies and the generation of enormous mineral chemical datasets. As a result, it is necessary to have a simple, robust and effective way to recalculate and visualize mineral compositional data.

We developed MinPlotX [1] as an easy to use open-source software for mineral formula recalculation and compositional plotting. By providing a stand-alone graphical user interface (GUI), MinPlotX is accessible to end users who have no programming experience. Additionally, the included application programming interface (API) enables advanced users to integrate their own data processing and visualization routines, thereby allowing community development of MinPlotX.

MinPlotX currently offers recalculation and structural formula assignment for 21 different minerals/mineral groups: allanite, amphibole, apatite, chlorite, chloritoid, cordierite, epidote, feldspar, garnet, ilmenite, lawsonite, mica, olivine, oxyspinel, pyroxene, scapolite, serpentine, staurolite, sulfides, talc, and titanite. One of the most powerful features of MinPlotX is the ability to add almost any type of numerical or categorized metadata, such as sample name, rock type, analysis location (e.g., core or rim), trace element concentration, age, and others, which can be used to subdivide or contour data.

MinPlotX is designed in a modular program architecture, allowing easy addition of new data processing and visualization modules or formula recalculation routines, without changing the overall structure of the program.

The philosophy of accessible and open software in the development of MinPlotX will hopefully enable users to customize MinPlotX to their own needs and encourage the community to contribute to the future development of MinPlotX.

[1] Walters, J. B. & Gies, N. B., (2025). MinPlotX: A powerful tool for formula recalculation, visualization, and comparison of large mineral compositional datasets. *Mineralogia*, 56, 13-22. <https://doi.org/10.2478/mipo-2025-0003>



THE! tool for mineral formula recalculation
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<https://github.com/NilsGies/MinPlotX>