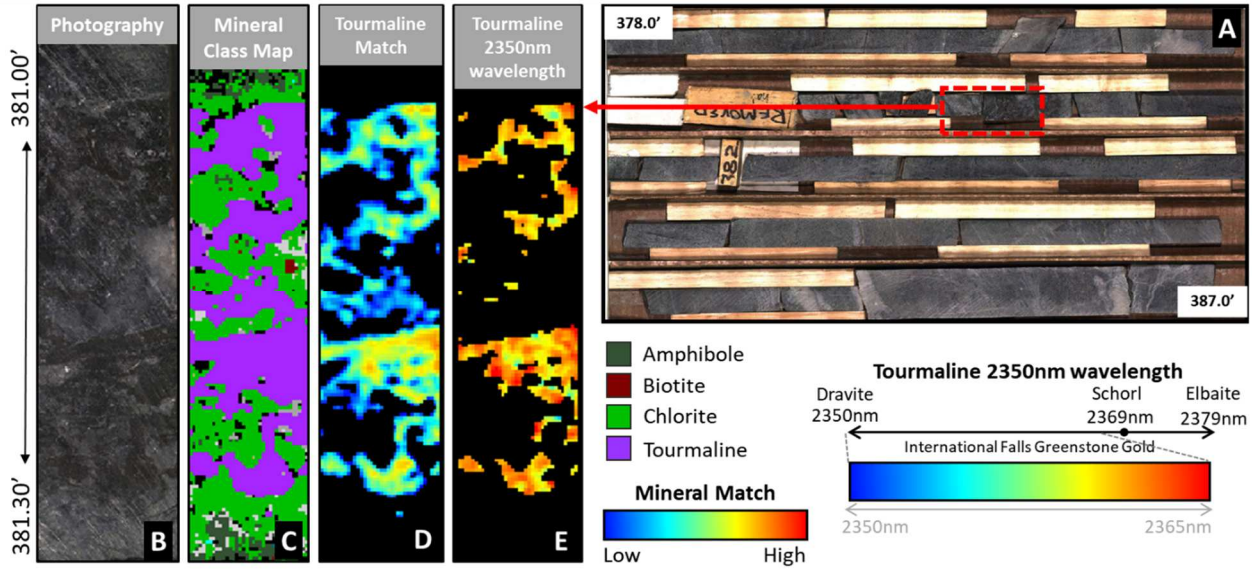
MnDNR Corescan Project

International Falls Greenstone Gold Core – Example Results



Photography (A,B), mineral class map (C), and hyperspectral match image of tourmaline (D) within an 8cm-long section of quarter-core from DDH TC35-1. This section is within a larger 4 foot (1.22m) core interval that assayed at 4020ppb Au. Variations in the 2350nm feature position (E, Bierwirth, 2004) suggest compositions within the dravite-schorl series.

Hyperspectral-detected Mineralogy	The archived drill core from the Seine Group, like other examples of greenschist facies rocks (e.g., Doublier et al., 2010), is very conducive to hyperspectral imaging. Many minerals/mineral groups within the International Falls area can be identified in the VIS-SWIR range, including a range of phyllosilicates (micas, chlorites, biotites), clays, pyroxenes, amphiboles, sulphates, carbonates, calcium-aluminium silicates (epidotes, prehnite, garnet), and tourmalines. See associated Mineral Key for full list of identified mineralogy with the Corescan HCI-3 system.
Results	The drill core included in this study exhibit significant geochemical variability, as determined from specific absorption feature parameters. For example, the white micas that have been identified show a range of compositions including Na-rich micas, high Al micas, low Al micas, phengites (based on variations in the ~2200nm feature) and fuchsite (green mica). Carbonate varieties include Fe-rich carbonates, dolomite, and calcite (based on variations in the ~2340nm feature). Tourmalines are of particular interest, given their association with Au mineralization. Tourmalines identified are dominated by schorl varieties (as determined by ~2350nm feature position; Bierwirth, 2008), although composition approaching dravite are also recognized. A systematic study of additional core could reveal consistent trends in mineral spectral parameters within the quartz-tourmaline-carbonate-sulfide veins that are correlated with Au grade.

References:

***Bierwirth, P.N.**, 2008. Laboratory and imaging spectroscopy of tourmaline - a tool for mineral exploration. 14th Australasian Remote Sensing and Photogrammetry Conference, Darwin.*

***Doublier, MP.**, Roache, A. and Potel, S., 2010. Application of SWIR spectroscopy in very low-grade metamorphic environments: A comparison with XRD methods. Geological Survey of Western Australia, Record 2010/7, 61p.*

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