

# Numerical Analysis Scripts

Scripts referenced in Appendix B of:

S.R. Jim, Nanoengineered Glancing Angle Deposition Thin Films for Ultrathin-Layer Chromatography, PhD Thesis, University of Alberta (Edmonton, Canada) (2014)  
<http://hdl.handle.net/10402/era.37014>

Original programming scripts written for the Mathworks ® MATLAB platform authored by:

Steven R. Jim, PhD (2014) | [sjim@ualberta.ca](mailto:sjim@ualberta.ca)  
Glancing Angle Deposition (GLAD) Research Group  
Electrical and Computer Engineering  
University of Alberta | Edmonton | Canada



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## Description

This archive collects programming scripts used in the analysis of data presented in three publications and in the above thesis:

- `ExtractChromaSJ20100128.m` was used to extract unfiltered darkness chromatograms from single diagonal dye separation tracks in [1].
- `ExtractChroma20101012.m` was used to extract hue-filtered chromatograms from single, possibly diagonal, tracks in [2].
- `TEM_EELS_process_linescan.m` was used to process STEM EELS data analyzed in [3].

The first two unedited scripts were used to extract chromatograms from images of developed planar chromatography (TLC, thin-layer chromatography; and UTLC, ultrathin-layer chromatography) media. Images of separated coloured dye spots are used by the scripts to produce quantitative (colour-filtered) chromatograms. Both scripts are inferior to the `singleImageUTLC.m` script in all ways except for in their ability to process diagonal separation tracks. (`singleImageUTLC.m` is uploaded separately with the Time-Resolved UTLC package also available at <http://hdl.handle.net/10402/era.37014>.)

The third script was used to process data collected by scanning transmission electron microscopy (STEM) electron energy loss spectroscopy (EELS).

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## References

- [1] S.R. Jim, M.T. Taschuk, G.E. Morlock, L.W. Bezuidenhout, W. Schwack, M.J. Brett, Engineered anisotropic microstructures for ultrathin-layer chromatography, *Analytical Chemistry*. 82 (2010) 5349–5356.
- [2] S.R. Jim, A.J. Oko, M.T. Taschuk, M.J. Brett, Morphological modification of nanostructured ultrathin-layer chromatography stationary phases, *Journal of Chromatography A*. 1218 (2011) 7203–7210.
- [3] S.R. Jim, A. Foroughi-Abari, K.M. Krause, P. Li, M.R. Kupsta, M.T. Taschuk, et al., Ultrathin-layer chromatography nanostructures modified by atomic layer deposition, *Journal of Chromatography A*. 1299 (2013) 118–125.

## Compatibility and Installation

The enclosed MATLAB \*.m files are intended to function with versions of Mathworks ® MATLAB Version 7 and later. The \*.m files are text files that may be opened and edited using any text editor (Notepad, Wordpad, Microsoft Word, and others). To install TR-UTLC package, unzip all \*.m files into the primary MATLAB directory.

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