

## **How to make code which will be compatible with Irena and Nika packages - programing user software in Igor Pro**

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Igor Pro (Wavemetrics Inc., [www.wavemetrics.com](http://www.wavemetrics.com)) is favorite platform for SAS data reduction and analysis software, utilized by number of institutions – for example NIST, IPNS, and number of APS beamlines. It's advantages are strong data processing combined with excellent graphic and data management capabilities – at reasonable price and with uniquely responsive support. Writing user code with complicated GUI is relatively easy and the code has very good cross platform compatibility between Windows and Mac OS X platforms.

Nika (<http://usaxs.xor.aps.anl.gov/staff/ilavsky/nika.html>) is package developed for reduction of 2-D data into 1-D lineouts for both small angle and wide angle scattering based on Igor Pro capabilities.

Irena (<http://usaxs.xor.aps.anl.gov/staff/ilavsky/irena.html>) package is large package combining number of SAS data analysis tools combined with utilities for data import, export, modification, and graphing. Other tools included are scattering contrast calculator for both X-ray and neutron scattering contrast, including Cromer-Lieberman code for anomalous effects, desmearing routine (using Lake method) and various other useful routines. Both of these two packages (as well as Indra package for USAXS data reduction) are routinely updated and their functionality keeps growing as user requested features are added.

One of the challenges of programing user code in Igor is maintaining compatibility with other users code which may be included on their computers. Major issue for programmer is to make sure the name space and temporary space for each package is unique and does not conflict with other code, as these are shared. Some issues can be limited by good programing practices and are listed in Igor manual. Understanding of the programing principles used in Irena and Nika packages is helpful.

Second challenge is to help user in navigating through potentially massive amounts of data by using good and logical layout and by sharing the naming conventions.

This presentation will review basic rules and practices used in Irena and Nika packages, discuss existing data naming conventions and organization methods (and their advantages and disadvantages), and review available libraries which users can use to simplify their code and discuss available naming conventions.