


# Shaped Pulses for Selective Excitation

Rachael Hohol  
Department of Chemistry, Wilkes University  
Wilkes-Barre, PA 18766

This is a brief guide to creating shaped pulses using the interactive shape tool. These shaped pulses can be used to selectively excite peaks.

1. Acquire a 1D spectrum of the compound of interest as a reference spectrum.
2. Using integration mode, define and integrate all regions around the peaks to be excited, then save and return.
3. Create a new dataset (edc or iexpno)
4. Read in the pulse program *selgpse*. (pulprog selgpse)
5. Switch back to the reference spectrum.
6. Open up the Shape Tool (**Spectrometer** → **Shape Tool** or stdisp).
7. Create a new Guassian curve (**Shapes** → **Classical Shapes** → **Guass**).
8. Set '*Size of Shape*' to 1000 and '*Truncation Level*' to 1.
9. **Options** → **Define Parameter Table**
  - a. Set '*Length of shaped pulse*' to P12
  - b. Set '*Power level of shaped pulse*' to SP2
  - c. Set '*Name of shaped pulse*' to SPNAM2
10. In the Shape Tool window, use the  tool to define a new excitation region by dragging the edges of the box to fit the peaks to be excited.

----- **OR** -----

Open the Manipulate Command Region window (**Manipulate** → **Calc. Shape from Excitation Region** or manipul region)

- a. Enter the number of peaks to be integrated and the carrier frequency, then press OK.
  - b. Enter the left and right limits of the peaks to be excited (in Hz). Set the '*Shape*' to Guass, '*Flip Angle*' to 180.0 and '*Initial Phase*' to 0.0.
  - c. Set "*Alignment with respect to*" to Center of Shape and "*Type of 180 Degree Pulse*" to Refocusing.
11. Click **Update Parameters** and name your shape.
  12. It will ask you to select an associated data set. Choose the one you created in Step 3.
  13. Return to the other data set (created in Step 3) and acquire a spectrum.