

TIPS FOR POLARIZING

Microwave Frequency:

Optimum frequency is a function of many things: dose, polarization, etc.
Generally, you have to search for the "best" frequency
When searching, make changes by 5MHz, 10MHz at the most
After making a change, wait about 3 NMR updates to see if it helped/hurt
Beam trips will change pol quickly and obscure the effect of your changes
Sometimes the tube is unable to oscillate at certain frequencies
As radiation damage accumulates, frequency will move:
 If polarizing positively, frequency will move down
 If polarizing negatively, frequency will move up
Use the logbook - see what frequencies worked for other people

FM Size:

We modulate the microwave frequency with a triangle wave generator
The size of the triangle wave can vary from 4V to 8V or so
For fresh material, usually 4V is a good start
As dose accumulates, best FM size increases to as high as 8V

Target Temperature:

At maximum polarization, the polarization is very temperature sensitive
Changes to the run valve affect the temperature, and therefore the pol.
The beam puts heat in the material, and thus also reduces the polarization
All three Roots pumps need to be running when polarizing
If one or more Roots pumps trip off, the polarization will crash