Elliott and coworkers are using a 13C-enriched sodium acetate species as a probe of 1H polarization under DNP. I am generally supportive of publication of this work as a communication of early data (after responding to a number of points/clarifications) because it will spur further studies, where the hyperpolarization interactions can be considered. The effects that the group reports are a potentially interesting finding that merits follow-up. I hope the group is pursuing sodium formate actively, since that may be an easier system to describe.

After reading the manuscript, I was left with a number of questions that I couldn't understand from my reading of the material:

- The appearance of the spectra in Figures 3a) and 3d) are not “single peaks” but rather spectra with multiple shoulders (spanning several 100 ppm). What is the origin of those? I would be curious to know if the appearance of the spectra is identical at shorter 1H DNP times in the sequence – does this line(shape) build homogeneously?
- What is the role of CSA or possible dipole-dipole interactions, and how are those manifest under both positive and negative microwave irradiation? What is the preferred energy state for coupling to P(1H) = + versus P(1H) = - ?
- Presumably the glycerol carbon and the quaternary carbon of the formate both contribute to the spectrum. Where are those, and how are those influenced by both cross-polarization and microwave irradiation?
- At extended 1H DNP times, there are additional intriguing details – the claim that these are now two separate resonances doesn't quite fit with the initial picture (of a “single [peak]”)
- Defining Eq 1 based on the fractional intensities of these two “peaks” feels somewhat arbitrary. Without knowing what these I_h and I_l features represent, it's somewhat difficult to tell this is arising from the 1H polarization or from some other effect.
- The different slopes for Figure 5 are explained empirically (lines 36-37) but is there a physical reason why the 1H polarization (or the asymmetry of the carbon resonances) would be more sensitive to negative microwave irradiation?
- Minor point: the term “crusher” is unfamiliar to me. Do you mean “saturation” sequence or “saturating comb”?