

## 4.4: Conclusions and Review

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The opportunity to use alternatives to typical organic solvents to do the same transformations with the same or better efficiencies has never been better than today. We are learning that we can do a lot of chemistry in a green way because we are putting our efforts into it. Although we still have a long way to go before solventless, gas phase, etc., are the mode of doing chemistry, the range of available reactions and processes is superb.

### Review Questions

1. What are the implications of using alternative solvents from a life cycle analysis perspective?
2. What are the energetic considerations for allowing polymerization to occur by ball milling?
3. What is the difference between a “critical point” and the “triple point” as defined in standard phase diagrams?

### Further Reading

1. Cagniard de la Tour C. 1822 Exposé de quelques résultats obtenu par l'action combinée de la chaleur et de la compression sur certains liquides, tels que l'eau, l'alcool, l'éther sulfurique et l'essence de pétrole rectifiée. *Ann. Chim.*
2. *Phys.* 21, 127–132.
3. Andrews T. 1869 The Bakerian Lecture—On the continuity of the gaseous and liquid states of matter. *Phil. Trans. R. Soc. Lond.* 159, 575–590.
4. Licence P, Ke J, Sokolova M, Ross SK, Poliakoff M. 2003 Chemical reactions in supercritical carbon dioxide: from laboratory to commercial plant. *Green Chem.* 5, 99–104.
5. Tang SLY, Smith RL, Poliakoff M. 2005 Principles of green chemistry: PRODUCTIVELY. *Green Chem.* 7,761–762.
6. Lovelock KRJ, Villar-Garcia IJ, Maier F, Steinrück HP, Licence P. 2010 Photoelectron spectroscopy of ionic liquid-based interfaces. *Chem. Rev.* 110, 5158–5190.
7. Ball Milling Reference: "Ball Mill Critical Speed & Working Principle". YouTube. N.p., 2016. Web. 29 Nov. 2016.

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