3.3.8: Lecture Demonstrations

Generation of Hydrogen

Artdej, Romklao; Thongpanchang, Tienthong. J. Chem. Educ. 2008, 85, 1382. Clyde R. Dillard; J. Chem. Educ., 1972, 49 (12), p A694. forums.jce.divched.org:8000/w...c5.7@.1adb1e29

Equal volumes of vinegar or other acid are added to a series of volumetric flasks, and increasing masses of $NaHCO_3$ are added to balloons. The balloons are attached to the necks of the flasks, then lifted to dump the $NaHCO_3$ into the vinegar. After the vinegar becomes limiting, the size of the CO_2-filled balloons no longer increases.

Nuts and Bolts Model

Use bolts and a mismatched number of nuts (and washers) to model limiting reactants. Craig Blankenship, J. Chem. Educ., 1987, 64 (2), p 134. forums.jce.divched.org:8000/w...c5.7@.1adb1e28

Nylon Synthesis

The "nylon rope trick" can be used as a conceptual demonstration of limiting reagents, especially if different numbers of red and blue paper strips (of different lengths) are used to model the acid and amine. This can be related to amino acid nutrition and protein synthesis. Ed Vitz;J. Chem. Educ., 2005, 82 (7), p 1013l