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PI Name: Robert H. Grubbs; Melanie Pribisko

**Corresponding Video Article Title:** An *in vitro* Enzymatic Assay to Measure Transcription Inhibition by Gallium (III) and H3 5,10,15-tris(pentafluorophenyl)corroles

**Chemistry Education Title:** Rotary Evaporation to Remove Solvent

**Overview**: Rotary evaporation is a technique most commonly used in organic chemistry to remove a solvent from a higher-boiling point compound of interest. Rotoevaporation requires mechanical rotation of a flask under vacuum. The rotation of the flask increases the surface area of the solvent to be removed, increasing the rate of evaporation and reducing the risk of “bumping”, when a large pocket of solvent vapor forms rapidly and displaces the surrounding liquid. The vacuum reduces the boiling point of the solvent, as well as providing a means to separate the solvent from the compound of interest.

This video will explain the process of rotary evaporation, including the key components of a rotary evaporator, “rotovap”. Advice for the most common organic solvents and crucial safety considerations will be presented.

**Procedure**:

1. Don the appropriate personal protective equipment (PPE), including goggles, labcoat and gloves.
2. Pour the mixture of solvent and desired compound in a round bottom flask. Best results are achieved when the flask is filled less than half full of your solution.
3. Fill the traps with dry ice.
4. Attach a glass “bump trap”, which prevents any solution from entering the main part of the rotovap. Clip with a keck clip.
5. With a Keck clip, attach the flask and bump trap to the adapter portion of the roto-evaporator.
6. Lower flask into water bath. This helps to prevent the flask from disconnection.
7. Start the rotation. Different speeds are preferable for different volumes.
8. Slowly start the vacuum. When you start to see condensation of the solvent on the cold finger or in the receiving flask OR you see bubbling of the solvent, leave the vacuum control at that setting.
9. Turn on the heat for the water bath. Recall from general chemistry that vacuum reduces the boiling point of the solvent, so you need significantly lower temperature to evaporate the solvent using a rotovap than at STP.
10. Adjust the vacuum setting as needed.
11. When all solvent has been removed, turn off vacuum and return flask to atmospheric pressure.
12. Stop the rotation.
13. Raise the flask from the bath.
14. Remove the flask from the adapter.
15. If you have more solvent to remove, you can add it to the same flask and repeat the procedure. Remember to empty the receiving flask when you are done.

**Representative Result:** In the video demonstration, we will show a representative mixture of dissolved compound in solvent and the resulting solid after rotary evaporation.

**Applications**: Rotary evaporation can be used to separate solvent from many organic, inorganic, and polymeric materials. It is crucial that the desired compound has a lower boiling point than the solvent and that the compound does not azeotrope with the solvent. If these conditions are true, then rotary evaporation may be a very efficient technique to separate solvent from your compound. Lower boiling solvents work best, however, rotary evaporation is commonly used to remove water. Higher boiling solvents such as DMF and DMSO are more easily removed using other techniques such as lyophilization, however, with a very good vacuum pump, they may be removed using rotary evaporation.