



# Bulk Polymerization Standard Operating Procedure (SOP)



OPALL

*Your Polymer Playground*

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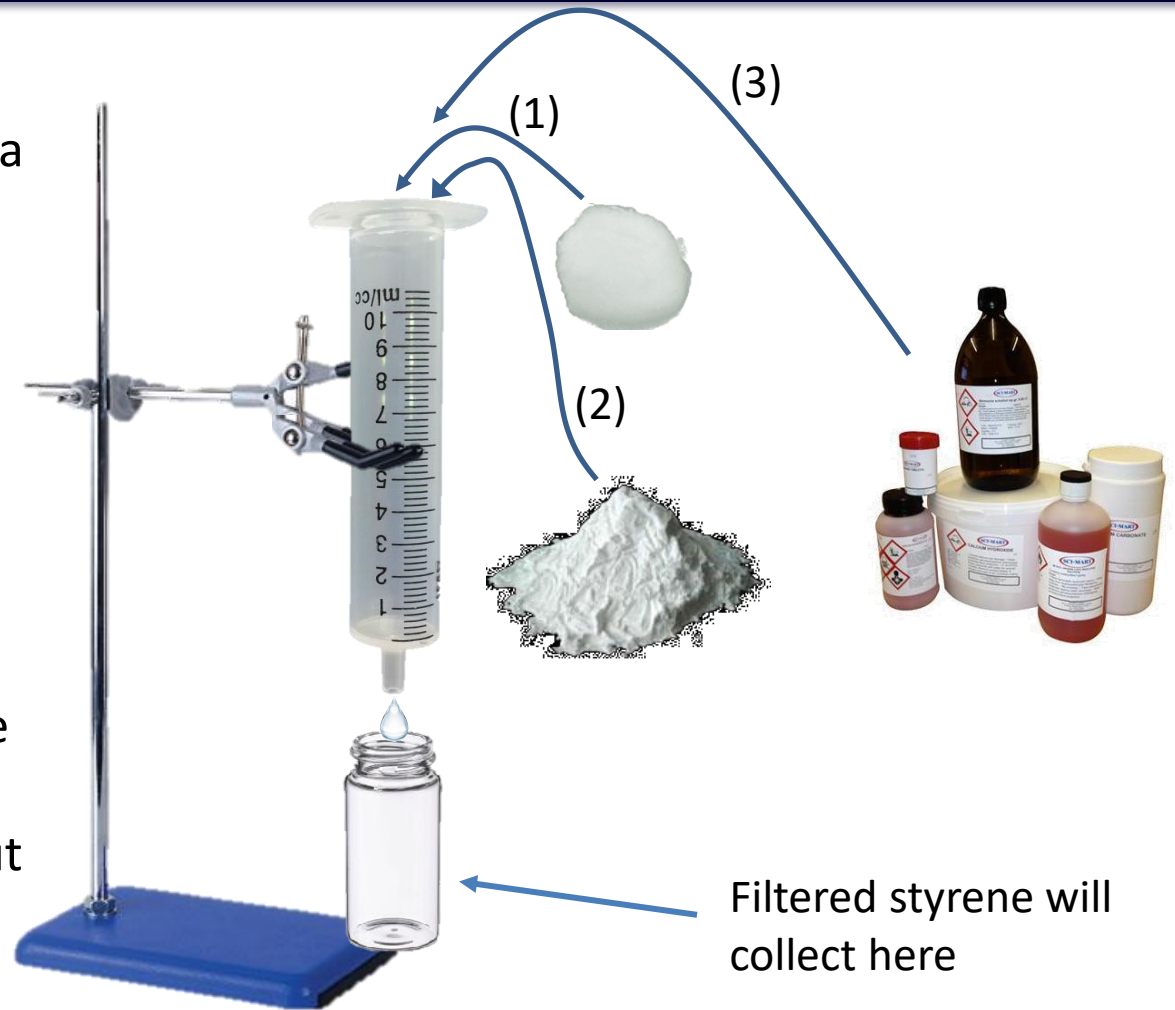
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# Removing the inhibitor in Bulk Styrene

We must pass the styrene monomer through an alumina column to remove the inhibitor. A cotton ball prevents the alumina from leaking out the column. The filtered styrene will collect in the 20 mL vial below the syringe.

We sometimes use expensive premade columns to remove inhibitor...same basic idea but easier.



# Other ways to remove inhibitor

Wash with water in a separatory funnel

Isolate top layer (drain aqueous layer, pour newly uninhibited styrene out of top or suck out)

Dry over  $\text{MgSO}_4$  or similar

Filter

Distill or vacuum distill



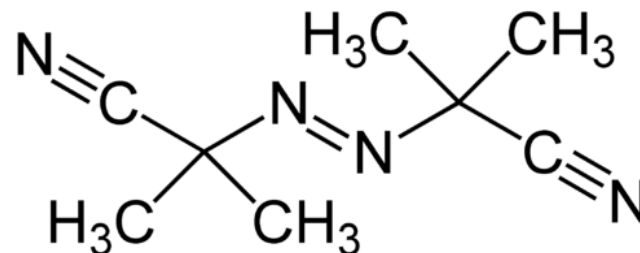
Sep funnels and a Vario PC 3000 vacuum pump are available in OPALL's Danger Lab

# Adding Initiator

Next, we must mix toluene and the initiator (AIBN) together. This is then placed into the filtered styrene monomer solution.



Toluene  
+  
AIBN initiator



# Mix the solution in an oil bath

Then, we should mix the solution using a glass rod. The mixture should also be placed at 80°C in a hot oil bath. Leave for 20 minutes, stirring occasionally.



# Observe the polymer

After letting cool to RT, use the glass rod to pull a fiber out of the mixture and observe the polymerization.



## Follow these tips for safe and efficient bulk polymerization.

- Put on glasses, gloves, and lab coats upon entering the lab.
- Perform the polymerization under the hood to avoid ingesting volatile chemicals.
- Take care when using the hot oil bath.