May 2020

LabChemistry_IS2_20160330_Camera2_Seg05.pdf

Participants: IS2 (individual with microphone), S1 (female, long black hair), S2 (female, not visible), S3 (female, long black hair), S4 (female, brown hair), S5 (female, black head scarf), S6 (female, close to camera, black hair), S7 (male, short hair, close to camera), S8 (male, not visible), S9 (female, not visible), S10 (male, middle of frame, normally to the left of frame), S11 (male, black hair), S12 (female, not visible)
Setting: Chemistry lab—IS2 assisting students in their experiments; camera restricted to one corner of lab, mic feed occasionally cuts out as indicated by ((unclear))

0:00

xxx IS2: flow with the
xxx w-w-with the one to one ratio this thing.
xxx it will not
xxx you know (.2)-
xxx uh-
xxx packed-
xxx uh-
xxx no-
xxx (it's not).
xxx uh
xxx the-the-the-the principle behind the separation is
xxx the-the thing in the mixture.
xxx you will have some interaction with uh-
xxx >it's like a gel.<
xxx but if the-if the solvent is too polar
xxx so-
xxx which is one to one ratio.=
xxx S1: ((nods)) =hmm
xxx IS2: so the-
xxx your- your thing is not-
xxx you know-
xxx have strong interaction the (acetic gel).
xxx it will ((hand gesture)) flow out [very quickly
xxx S1: [flow out
xxx [OK
xxx IS2: [and you got very bad separation.
xxx S1: ((nods)) oh:
xxx OK
xxx OK that makes sense=
CLF IS2: =so:
CLF so:
CLF one strategy is that uh you just make
CLF uh-
CLF don't let your solutions-
CLF you know like-

CLF too many solvents.=
xxx S1: =OK
xxx IS2: uh-
xxx as much-as little as possible
xxx S1: ((nods)) OK
xxx IS2: and uh
xxx if you can dissolve without m- solvent
xxx uh:-
xxx not solvent-
xxx your-
xxx mm-
xxx your -
xxx uh-
xxx reaction crude.=
xxx S1: =mhm
xxx IS2: which is crude.
xxx right?=
xxx S1: =mhm
xxx IS2: so before your separation-
xxx this is crude-
xxx right?
xxx S1: yea it's crude=
xxx IS2: =yea
xxx so.
xxx as-use as little as-
xxx uh-
xxx solvent to dissolve your crude.=
xxx S1: ((nods)) =alright
xxx IS2: and upload to the column=
xxx S1: ((nods)) =OK=
xxx IS2: =so which gives you best solution=
xxx S1: =oh=
xxx IS2: =so
xxx so: anyways
xxx so this-for this reaction.
xxx it will influence.
xxx OK?=
xxx S1: ((nods)) =it will influence OK
xxx thank you
xxx IS2: yea
xxx ((continues walking))
xxx ((1:13-2:00 no dialogue))
xxx you can do this for: (.)
xxx several times,
xxx four times is OK.
xxx ((2:05-2:37 no dialogue))
xxx so:
xxx after you finish this,
xxx y-you just wait, ((unclear))

xxx S2: this one
3:00
xxx (this one is closing or I just this one is)
xxx IS2: I'm not sure
xxx just (shake).
xxx if it is very tight i-it should be closed, ((unclear))
xxx ((unclear))
xxx you want to dissemble this
xxx you just take the: condenser out first.=
xxx S2: =uh-huh
xxx IS2: OK
xxx and uh:
xxx (we collect this)
xxx o-oh!
xxx sorry.
xxx you can take-take it out ((unclear))
xxx ((unclear)) yes
xxx ((3:34-4:10 no dialogue))
xxx (OK) ((unclear))
xxx I think so.
xxx OK
xxx just prepare the funnel,
xxx and transfer into the funnel,
xxx and then rinse with
xxx uh:
xxx ether,
xxx and uh:
xxx transfer into the funnel again,
xxx and uh
xxx add the (.) water in the funnel.
xxx and (.) shake
xxx vent
xxx and (got) two layers,
xxx and make sure you
xxx after you got two layers
xxx uh:
xxx when you waiting
xxx w-when you are waiting for two layers
xxx uh:
xxx get the: stopper out.
xxx OK,
xxx and
xxx two layers
xxx one goes to the-
xxx uh
xxx t-t-t-t-the top layer's organic layer.
xxx a-and the bottom layer's aqueous layer.
xxx one is to another flask,
xxx and the other to another flask.

xxx OK?
xxx S2: do you want me to put it in a flask?
xxx or can I put it in a beaker.
xxx IS2: beaker is fine too
xxx but uh
xxx for the: organic layer
xxx I gest-I suggest y-you use flask.
xxx for the aqueous it's fine=
xxx S2: =OK
xxx IS2: uh
xxx (beaker is good too)
xxx S2: (do I need to rinse this)
xxx IS2: no
xxx (I) don't need to.
xxx S2: (just put in there?)
xxx IS2: yes
xxx ((5:08-5:22 no dialogue; feed cuts out frequently))
xxx yea
xxx S3: what does it mean by ((unclear))
xxx like
xxx ((unclear)) sodium carbonate ((unclear))
xxx IS2: oh
xxx this is organic layer right?
xxx ((unclear)) but you still have some a((unclear))
xxx ((unclear)) so:
xxx S3: ((indistinguishable))=
xxx IS2: =yea
xxx just transfer into the:
xxx it's not bubble.
xxx it's-it's ((unclear)) layer.=
xxx S3: =oh ((unclear))
xxx oh OK
xxx IS2: ((unclear)) you can ((unclear)) strain into the funnel
xxx again,
xxx and uh:
xxx ((unclear))
xxx ((unclear)) then transfer into here again,
xxx S3: do I: need to ((unclear))
xxx IS2: uh:
xxx you can add a little bit of water=
xxx S3: =alright=
6:00
xxx IS2: =because if you cannot see two layer very separately
xxx you can add a little bit of water=
xxx S3: =yea
xxx IS2: because
xxx which c- makes you very clear which is which=
xxx S3: =OK=
xxx IS2: =OK

xxx S3: OK
xxx so in this,
xxx um
xxx I added the ten percent sodium carbonate,
xxx IS2: so did you
xxx uh
xxx you need to fix-
xxx uh mix them.
xxx S3: yup
xxx IS2: OK?
xxx S3: OK
xxx and then
xxx I:
xxx IS2: uh: ((nervously))
xxx d-do in a hood
xxx because
xxx you know=
xxx S3: =oh
xxx OK=
xxx IS2: =very strong smell
xxx S3: and also
xxx um
xxx you said to add a little bit of water and then put it
xxx in the separatory funnel?=
xxx IS2: =yes
xxx S3: and we don’t need to add the ether anymore
xxx right?
xxx IS2: uh:
xxx we have the organic layer here
xxx right?=
xxx S3: =mhm
xxx IS2: and you add
xxx how many
xxx uh
xxx S3: [the ten
xxx IS2: [how much [volume (.) have you added
xxx S3 [ten
xxx ten milliliters
xxx IS2: ten milliliters
xxx S3: of
xxx um
xxx IS2: did you see some
xxx in uh
xxx bubbles (are)
xxx S3: yea
xxx IS2: when you m-when you mix=
xxx S3 =yea
xxx IS2: OK
xxx S3: we did

xxx IS2: so
xxx yea
xxx just
xxx uh
xxx lemme look at your ((unclear))
xxx you just transfer all of them=
xxx S3: =mhm
xxx IS2: into a funnel,
xxx and it's- again
xxx you got two layers
xxx right?
xxx S3: that's it
xxx right=
xxx S3: =yea
xxx IS2: and you got the
xxx uh
xxx (to separate them)=
xxx S3: =mhm
xxx IS2: one by one=
xxx S3: =mhm=
xxx IS2: =the one is ((unclear)) and one is in the separatory
xxx funnel
xxx so for organic-the organic layer
xxx so
xxx uh
xxx you-uh
xxx do-do this
xxx for two times,=
xxx S3: =mhm
xxx IS2: add the sodium carbonate again,
xxx and then mix them,
xxx because until you got-
xxx y-y-you-until you-you check the aqueous layer.
xxx if it is (basic)
xxx then you're done=
xxx S3: =OK
xxx IS2: do you know what I mean
xxx S3: yea
xxx IS2: OK
xxx S3: that makes sense
xxx and then what do I do with the aqueous layer?
xxx IS2: uh:
xxx you can just-just leave it out.
xxx leave out until you finish all experiment.=
xxx S3: =mhm
xxx IS2: so:
xxx but
xxx uh
xxx theoretically you don't need aqueous layer=

xxx S3: =OK
xxx IS2: OK
xxx but uh=
xxx S3: =just in case
xxx IS2: just in case
xxx S3: OK
xxx that's fine
xxx IS2: ((continues walking))
xxx it's good?
xxx S4: um ((unclear))
xxx IS2: oh
xxx S4: yea
xxx IS2: it's ((unclear))
xxx right?
xxx uh:
xxx just wait
xxx S4: yea
xxx S5: should I ((unclear))=
xxx IS2: =uh: ((unclear))
xxx ((to S4)) now first thing you need to do is get the
xxx condenser out first
xxx get the condenser out
xxx out
xxx I mean-
xxx get the condenser out.
xxx S4: (get this out)-
xxx oh::
xxx IS2: ((unclear)) the tubes out
xxx OK?
xxx and then (.2)
xxx next thing
xxx take this out
xxx and uh pour into the thin-
xxx uh
xxx in-into the
xxx sink
xxx right?
xxx S4: (OK)
xxx IS2: yea
xxx two tubes goes to the-
xxx go to the sink
xxx did you get it all out
xxx S4: (yea)
xxx IS2: OK
xxx yea
xxx S5: do I turn off the water?
xxx IS2: no I don't think so
xxx it is hot
xxx right?

xxx S5: oh yea
xxx IS2: if you have the water,
xxx goes through,
xxx so which make your (.) cooling rate [faster,
xxx S5: [oh:
xxx OK
xxx IS2: just l-let it ((unclear))
xxx so:
xxx after it is cooling ((unclear)) (off)
xxx S5: ((nods))
xxx IS2: ((continues walking and approaches S6))
xxx waiting for cooling=
xxx S6: =yea=
xxx IS2: =OK
xxx S6: it's kinda warm
xxx IS2: kinda warm ((reaches into apparatus to check temp))
xxx S6: ((unclear)) the cooler isn't
xxx IS2: I think (.) it's good
xxx S6: it's good?
INT IS2: yea
INT just transfer
INT you can use a funnel
xxx S6: yea
INT IS2: oh
INT no-no funnel
INT you can use
INT uh:
9:00
INT ((looks and reaches below)) this funnel
INT or: this funnel
xxx S6: ((unclear)) this one
xxx IS2: oh
xxx you have this one
xxx S6: yea
xxx IS2: OK
xxx you can use that one=
xxx S6: =OK
xxx IS2: just transfer in here
xxx and-
xxx S6: and you have to like
xxx kind of
xxx uh
xxx stop the boiling stone (from getting)-
xxx IS2: no
xxx don't
xxx S6: in
xxx IS2: but I don't think it-you can stop the boiling stone
xxx but just-just make sure -
xxx S6: ((indistinguishable))-

xxx IS2: no
xxx that’s go to the
xxx uh
xxx flask
xxx uh:
xxx to the funnel=
xxx S6: =OK=
xxx IS2: =and again
xxx so
xxx rinse with
xxx uh
xxx ether
xxx twenty mil ether with
xxx uh
xxx rinse with this, ((points to within station))
xxx and you got the remaining (.) into the funnel again,=
xxx S6: ((nods)) =yea
xxx (the water)
xxx IS2: and the water
xxx direct into funnel.
xxx and then shake,
xxx and vent.
xxx OK
xxx and the
xxx so
xxx when-when you are waiting
xxx make sure the stopper out.
xxx ((hand motion)) take the stopper out.
xxx so which makes the two layers appear very fast.
xxx S6: OK
CLF IS2: OK?
CLF and one is into the
CLF uh
CLF aqueous is the bottom layer
CLF it goes to the
CLF uh
CLF how to say
CLF it go to another
CLF so we need to prepare two (.) flask
xxx S6: yea=
xxx IS2: =OK
xxx S6: (there in here)
xxx IS2: OK
xxx so for the aqueous layer
xxx doesn’t matter
xxx but make sure for the organic layer
xxx it goes to the
xxx uh
xxx (Erlen) flask=

xxx S6: =and when we add base to the organic layer
xxx we do it at least two times?=
xxx IS2 =two times
xxx and t- so
xxx theoretically two times
xxx but you ha- still
xxx you need to check the pH for the aqueous layer.
xxx until it is basic.=
xxx S6: ((nods)) =yea
xxx OK
xxx IS2: if it is basic
xxx then you are done
xxx S6: ((nods))
xxx IS2: OK?
xxx S6: OK
xxx alright
xxx thank you
xxx IS2: ((turns around)) yea
xxx S7: ((inaudible))
xxx IS2: OK
xxx ((reaches inside to check temperature of solution))
xxx it's good
xxx S7: it's good?
xxx IS2: yea
xxx S7: alright
xxx IS2: so:
xxx make sure no (.) boiling stone goes to the (.) funnel
xxx S7: ((nods)) yea
xxx IS2: ((continues walking))
xxx is this your's?
xxx S8: yea
xxx IS2: OK
xxx get the: stopper out.=
xxx S8: =OK
xxx IS2: yea
xxx get (a) stopper out.
xxx ((continues walking))
xxx uh:
xxx vent (.) here
xxx S9: (oh)
xxx (I thought we keep opening it)
xxx wait
xxx how do I this again?
xxx IS2: let me do this.
xxx let me show you.
xxx so basically,
xxx here.
xxx OK=
xxx S9: =mhm

xxx IS2: so
xxx use a pump,
xxx S9: ((unclear))
xxx IS2: now less weight,
xxx and then,
xxx now less,
xxx and close this=
xxx S9: =oh
xxx IS2: do it again,
xxx and open this,
xxx OK
xxx now less,
xxx OK
xxx and uh
xxx after that-
xxx so
xxx make sure every time you do the:
xxx every time you finish the: shaking and the vent,
xxx so-
xxx open this,
xxx and (the) put it into the (.) clamp,
xxx until you can see two layers.
xxx OK?=
xxx S9: =yea
xxx IS2: OK
xxx it's good
xxx right?
xxx S9: OK
xxx ((unclear))
xxx ((unclear))
xxx IS2: so get the condenser out first
xxx S9: (get the what?)
xxx IS2: condenser
xxx don't-
xxx don't-
xxx uh:
xxx make sure it is ((unclear))
xxx i-is it good?
xxx ((unclear)) oh
xxx OK ((laughs))
xxx S9: no
xxx I just ((unclear))
xxx IS2: it's dangerous
xxx OK
xxx so
12:00
xxx next time do this
xxx so
xxx oh!

xxx my god
xxx ((unclear)) (get the) condenser out first.
xxx because you have water inside this
xxx right?
xxx S9 right=
xxx IS2: =you need to get out wat- out
xxx out
xxx right?
xxx so just put in one side,
xxx ((unclear))
xxx S9: ((unclear)) outside?
xxx IS2: >yea yea yea<
xxx put it outside.
xxx because you need to (.) (handle with this).
xxx S9: (put the stop on it?)
xxx IS2: so
xxx the right thing you need to do is-
xxx you need to get the l((unclear)) out
xxx right?=
xxx S9: =yea
xxx IS2: take this out
xxx and ((12:38-13:12 feed keeps cutting out; no
xxx understandable dialogue))
xxx how long have you ((unclear))
xxx S9: (like) ten more minutes.
xxx IS2: ten more minutes
xxx OK.
xxx S9: ((unclear))
xxx IS2: mhm
xxx S9: ((unclear)) (beginning)
xxx IS2: oh
xxx OK
xxx S9: like-
xxx IS2: so-
xxx S9: that’s why I have a late setup.
xxx IS2: ((unclear)) OK ((unclear))
xxx ((13:28-14:01 no dialogue))
xxx S3: um ((unclear))
xxx IS2: spill?
xxx S3: ((dejectedly)) yea:
xxx ((unclear)) forgot to turn this-
xxx IS2: off?
xxx S3: t- yea
xxx and it just spilled here
xxx IS2: this is all: your product
xxx huh
xxx ((14:13-14:29 feed keeps cutting out))
xxx ((unclear)) enough time to redo this experiment
xxx ((unclear)) um

xxx >so it doesn’t matter<
xxx so
xxx OK
xxx just
xxx um:
xxx ((backs away from station)) OK
xxx it’s strong smell
xxx right
xxx S3: yea:
xxx IS2: ((laughs)) so
xxx right now just ((unclear)) clean here
xxx and doesn’t matter.
xxx so ((unclear))
xxx so f-for today’s,
xxx it doesn’t matter.
xxx for n-next week,
xxx you can get the:
xxx you can get it after. ((unclear))
15:00
xxx ((14:56-15:06 feed keeps cutting out))
xxx but still
xxx you can get some ((unclear))
xxx S3: OK
xxx IS2: something
xxx S3: ((unclear)) so ((unclear)) for today then
xxx we’re gonna-
xxx IS2: for today then
xxx right now
xxx uh:
xxx ((unclear)) clean up this
xxx right?
xxx (can you clean this)
xxx ((indistinguishable))
xxx it’s fine too=
xxx S3: =yea
xxx I’ll-I’ll try to-
xxx IS2: y-you can use
xxx uh
xxx tubes.
xxx uh
xxx the pipette
xxx S3: pipette
xxx IS2: g-get some
xxx S3: alright
xxx IS2: ((unclear)) into the:
xxx OK?
xxx yea
xxx S3: thank you
xxx IS2: ((continues walking then immediately turns around))

xxx ((unclear)) OK?
xxx if it
xxx uh ((unclear)) it's not good
xxx so
xxx just leave it
xxx OK?=
xxx S3: =OK
xxx thank you
xxx IS2: ((turns around and continues))
xxx yea
xxx ((approached by S6 and begins to walk to her station))
xxx S6: ((inaudible)) (but it was kind of)
xxx IS2: uh what's the problem
xxx S6: ((points inside station)) I think this is leaking a
xxx bit?
xxx IS2: oh
xxx it's leaking right?
xxx S6: yea
xxx IS2: ((leans into station))
xxx S6: wait
xxx hold on
xxx the funnel's still ((unclear)) ((reaches into station))
xxx IS2: OK
xxx S6: right
xxx IS2: ((tightens something))
xxx S6: ((unclear)) tighten the back
xxx IS2: ((takes out separatory funnel and flask and taps them
xxx together))
xxx OK ((returns items to station))
xxx just
xxx um
xxx ((unclear)) can take
xxx uh:
xxx you can transfer into this-
xxx uh
xxx this is clean right?
xxx S6: yea
xxx IS2: OK
xxx just get all of them out
xxx S6: yea
xxx IS2: and uh:
xxx r-rinse-rinse with
xxx uh:
xxx ether,=
xxx S6: =yea
xxx IS2: because you still have some=
xxx S6: =yea
xxx IS2: uh:
xxx thing inside your funnel

xxx right?
xxx rinse with the funnel
xxx uh
xxx rinse with
xxx uh:
xxx ether,=
xxx S6: =yea
xxx IS2: and then ((points to back with thumb)) get a new one
xxx from (sub) room,=
xxx S6: =mhm
xxx IS2: because you just say
xxx I do-I did a (linking) test,
xxx and uh
xxx it is not good
xxx I wanna change a new one,=
xxx S6: =OK
xxx IS2: OK?
xxx S6: and I used the same ether.
xxx IS2: this is ether?=
xxx S6: =yea=
xxx IS2: =OK
xxx just wash with-
xxx S6: ((unclear))
xxx OK
xxx IS2: wash them=
xxx S6: =OK
xxx IS2: (but)
xxx don’t use (.) all of them=
xxx S6: =yea
xxx some
xxx IS2: some of them=
xxx S6: =OK
xxx IS2: to wash them=
xxx S6: =OK
xxx IS2: and you- after you got new one,
xxx and you transfer-
xxx you transfer this into the funnel again,
xxx S6: ((nods))
xxx IS2: and then add water.
xxx and the rest of the ether.
xxx S6: ((nods)) OK
xxx IS2: OK?
xxx S6: yea
xxx thank you
xxx IS2: sure
xxx ((continues walking))
xxx is this the organic layer,
xxx S8: yea
xxx I just added

xxx IS2: have you
xxx S8: I just added the
xxx um
xxx IS2: sodium carbonate
xxx S8: ((unclear))
xxx IS2: have you (.) mixed them-
xxx S8: yea I (haven't)
xxx IS2: is there any bubbles up?
xxx S8: uh:
xxx a little bit
xxx a lot
xxx ((indistinguishable))
xxx IS2: because the:
xxx the carbon dioxide will produce what they react
xxx (within them)
xxx S8: ((unclear)) didn't see any=
xxx IS2: =OK
xxx it's not too much maybe=
xxx S8: =yea
xxx IS2: but
xxx uh
xxx w-w-what you waiting for?
xxx S8: oh
xxx uh
xxx I was just gonna
xxx I was just ((unclear))
xxx IS2: OK
xxx so
xxx yea
xxx do it again
xxx and so after you do the extraction ((unclear))
xxx uh
xxx the separation.
xxx (it go) again and again
xxx and the:
xxx add the sodium carbonate again until you check the
xxx aqueous layer.
xxx so the pH is basic,
18:00
xxx so then
xxx S8: ((unclear))
xxx could I use the same flask or should I get a different
xxx one.
xxx IS2: uh
xxx different one is good.
xxx because y-you still have some-
xxx you know-
xxx S8: OK
xxx IS2: uh:

xxx I think this one is good too.
xxx doesn't matter
xxx S8: ((unclear))
xxx IS2: uh you can use this.
xxx but if you have extra-
xxx you know-
xxx flask,
xxx you ((unclear)) use ((unclear))=
xxx S8: =OK
xxx IS2: OK
xxx ((unclear)) too ((unclear)) is fine too
xxx S8: now the yellow layer ((unclear)) the organic layer
xxx IS2: yes
xxx S8: so I want-
xxx IS2: so
xxx get the stopper out
xxx S8: what?
CLF IS2: get the stopper
CLF stopper out
CLF uh-huh
xxx yea
xxx just collect the: top layer,
xxx and uh
xxx add sodium (.) carbonate into the organic layer,
xxx and then mix,
xxx and do the-do the s-
xxx uh
xxx separation again,=
xxx S8: =OK
xxx thank you
xxx IS2: ((unclear))
xxx or you can
xxx yea
xxx S9: um
xxx ((unclear)) organic layer
xxx so now I add the sodium
xxx IS2: is this top layer?
xxx S9: yea=
xxx IS2: =OK
xxx so add a so-carbonate-sodium carbonate ((unclear)) this=
xxx S9: =OK
TRP IS2: and mix
TRP uh
TRP you can use a:
TRP you know
TRP how you say
TRP stirrer?
TRP not stirrer
TRP spatula?

TRP not spatula
TRP do you have the
TRP uh
TRP glass
TRP uh:
xxx S9: yea
xxx IS2: glass-glass bar
xxx right?
xxx S9: (uh)
xxx IS2: how do-how do you call this?
xxx S9: uh:
xxx the stirrer
xxx IS2: it is stirrer?=
xxx S9: =yea
xxx IS2: OK
xxx S9: ((laughs))
xxx IS2: so:
xxx ten mil
xxx right?
xxx S9: uh:
xxx ten?
xxx yea
xxx (I was right)
xxx uh
xxx IS2: yea ten mil
xxx ten mil,
xxx and uh
xxx mix ((unclear)) organic layer.
xxx S9: again?
xxx IS2: still organic layer.
xxx S9: OK
xxx IS2: after you got it again and again
xxx and then you add ((unclear)) agai-f-for this
xxx so do this again until you ((unclear)) for the-
xxx for the aqueous ((unclear))
xxx have you (.) vent?
xxx have you-have you (done that) here?
xxx S9: I did
xxx IS2: you have two layer
xxx right?
xxx S9: oh:
xxx OK
xxx IS2: (have you seen this?)
xxx S9: yea
xxx IS2: ((unclear))
xxx S9: but it wasn’t brown
xxx IS2: have you seen two layers
xxx S9: yea
xxx IS2: w-w-what do you mean by brown?

xxx S9: oh
xxx he said it should look a little brown
xxx the layer=
xxx IS2: =I don’t think so
xxx S9: OK
xxx so do it again?
xxx IS2: have you vent-vent for-
xxx S9: I did once
xxx IS2: only once?
xxx S9: like I ((unclear))
xxx once is not enough
xxx S9: not once
xxx IS2: at least four times
xxx OK,
xxx ((20:34-20:54 feed cuts out))
xxx OK
xxx ((unclear)) because it’s hot
xxx S9: oh
21:00
xxx ((20:57-21:50 feed cuts out))
xxx IS2: maybe you can l-let the flow rate a little bit slower?
xxx ((unclear)) with your hand ((unclear)) the flow
xxx ((unclear)) is it good?
xxx S9: yea
xxx IS2: OK
xxx S9: ((unclear))
xxx and I’ll put this in the (.) flask.
xxx ((unclear)) mean the=
xxx IS2: =funnel
xxx S9: funnel- this
xxx ((unclear)) because
xxx IS2: if it is like this way
xxx S9: it’s open.
xxx IS2: it’s open
xxx OK?
xxx this way is closed,
xxx so after it’s clean
xxx and the- you have the solution.
xxx you got ((unclear))=
xxx S9: =mhm
xxx IS2: (around) here
xxx just
xxx you have the funnel,
xxx you can transfer with the funnel,
xxx and ((unclear))
xxx (and stay in this funnel) is OK too,
xxx ((unclear)) you just ((unclear)) the solution into the
xxx funnel.
xxx and uh

xxx you rinse the twenty mil ether ((unclear))
xxx rinse this with twenty mil ether,=
xxx S9: =uh-huh
xxx IS2: rinse ((unclear)) you still have ((unclear)) ether,
xxx S9: ((unclear)) oh
xxx ((unclear)) OK
xxx ((unclear)) and then
xxx IS2: you rinse with (your) ether
xxx and y-y-y-you put the rinse [into the here
xxx S9: [in here
xxx [and add-
xxx IS2: [and then you add
xxx and uh
xxx sh-shake
xxx S9: shake
xxx IS2: do you know how to use funnel
xxx I can show you
xxx c-c-can you give me the stopper?
xxx S9: yea=
xxx IS2: =OK
xxx so after a-all the solution inside this
xxx right?=
xxx S9: =yea
xxx IS2: you c-close this,
xxx and like this way,
xxx shaking,
xxx S9: uh-huh
xxx IS2: and uh
xxx vent.
xxx because after-
xxx S9: oh
xxx open and close
xxx IS2: open and close
xxx OK
xxx S9: yea
xxx IS2: shaking
xxx close
xxx open
xxx shake-for at least four times
xxx S9: OK=
xxx IS2: =OK?
xxx after you finish that
xxx you put into the: ((unclear))
xxx i-into the ring
xxx OK ((unclear))
xxx ((unclear)) ((unclear))
xxx and uh
xxx remember
xxx like uh- take this (.) stopper out.

xxx ((unclear)) two layer
xxx the top layer is the organic layer
xxx we need organic layer
xxx and the l((unclear))
24:00
xxx ((feed cuts out until 24:08))
xxx yea
xxx just for the a-aqueous layer.
xxx you just leave-leave it.
xxx l-l-l-l-leave it.
xxx S9: yea:
xxx IS2: don't discard them.
xxx just leave it.
xxx S9: just leave it
xxx yea
xxx IS2: and uh
xxx for the-
xxx S9: so then the bottom layer will be the water
xxx right
xxx IS2: yea
xxx we need uh-top layer
xxx S9: yea
xxx IS2: OK
xxx ((unclear)) organic layer
xxx add sodium (.) carbonate
xxx because we have the acid inside this.
xxx we need to use base to (.) remove the-
xxx to neutralize the acid.
xxx we don't want acid
xxx right?
xxx S9: yea
xxx IS2: acid is our (.) ((unclear)) (.) thing
xxx S9: mhm
xxx IS2: do you know what I mean?=
xxx S9: =yea
xxx IS2: yea
xxx S9: and then you wanna end with the:-
xxx IS2: so
xxx you add a sodium carbonate inside your
xxx uh
xxx organic layer,
xxx which is in the: flask,
xxx right?
xxx and the (.) mix with a bar,
xxx you can stir,=
xxx S9: =yea
xxx IS2: you can use a stirrer to mix them
xxx and then
xxx after stirring

xxx you transfer all the solution into the funnel again,
xxx and do the separation again=
xxx S9: =oh yea=
xxx IS2: =and got a-aqueous layer,
xxx and you got organic layer,
xxx for the organic again,
xxx add a sodium carbonate again,
xxx at least two times,=
xxx S9: =OK
xxx IS2: so
xxx th-th-the thing is you need to check the aqueous layer.
xxx until the aqueous layer is basic.
xxx so if it is basic
xxx that means the acid is removed completely,
xxx and you collect o-organic layer,
xxx and then you do the (load-up).
xxx S9: so do the litmus ((unclear))
xxx right?
xxx IS2: (.) yes.
xxx S9: yea
xxx IS2: and for the organic layer ,
xxx you need to-
xxx after you got- after you do several times.
xxx right,
xxx un-until the aqueous layer is basic
xxx right?
xxx so you got organic layer d- and the drying agent.
xxx S9: OK=
xxx IS2: =because you still have some
xxx you know
xxx S9: yea
xxx IS2: water (.) a tiny amount of water inside your organic
xxx layer.=
xxx S9: =and then dry them again.
xxx IS2: dry it with-with a sodium-sulfate
xxx which is a drying agent.
xxx S9: yea
xxx IS2: OK?=
xxx S9: =OK
xxx IS2: is that clear to you?
xxx ((25:47-26:29 no dialogue/feed cuts out))
xxx ((continues walking around))
xxx S10: ((stops IS2 and holds up a small flask at eye level))
xxx is this enough
xxx uh
xxx to dry it?
xxx IS2: I think so
xxx just
xxx uh

xxx ((examines flask))
xxx yea
xxx I think so
xxx S10: ((continues walking))
xxx IS2: i-it is sodium (.) sulfate
xxx right?
xxx S10: yea yea yea
xxx IS2: ((nods)) OK
xxx S11: ((approaches IS2 holding flask at eye-level))
xxx I think too much got in here?
xxx IS2: ((looks at flask)) it doesn't matter
xxx S11: it doesn't matter?
xxx IS2: yea
xxx S11: OK
xxx thank you ((walks away))
xxx IS2: ((to self))
xxx so
xxx yea
xxx ((walks over to apparatus and powers it on))
27:00
xxx ((26:52-27:58 no dialogue))
xxx no ice ((unclear))
xxx ((28:00-28:34 IS2 going to retrieve ice; no dialogue))
xxx ((to student getting ice)) wait
xxx uh:
xxx can you wait for a minute?
xxx ((begins scooping ice while student walks away))
xxx ((28:37-28:56 no dialogue))
xxx ((to student)) OK
xxx you can use it
xxx ((28:59-29:10 no dialogue))
xxx S9: (I have a question)
xxx IS2: ((turns around))
xxx S9: so
xxx if ((lifts flask to eye-level)) this is less than
xxx twenty-five
xxx IS2: have you
xxx uh:
xxx dry with drying agent
xxx S9: yea
xxx IS2: are you-y-y-you do the separate ((unclear))
xxx S9: ((nods))
xxx IS2: OK
xxx so uh
xxx w-w-what's your problem?
xxx S9: ((indistinguishable))
xxx IS2: oh
xxx th-the- supposed to have twenty-
xxx uh

xxx twenty-five mil
xxx right?
xxx S9: (what?)
xxx no
xxx it's
xxx ((begins walking to her station as IS2 follows))
xxx it says (.) the volume of the solution should be
xxx twenty-five milliliters=
xxx IS2: =yea
xxx S9: so:
xxx IS2: they don't check (.) whether you have the twenty mil
xxx right?
xxx twenty-five mil.
xxx S9: (no)
xxx (I didn't test for this)
xxx IS2: eh
xxx but
xxx I think
xxx uh:
xxx it doesn't matter
xxx so right now just do the
xxx the lab
xxx OK?
xxx ((returns to ice station before walking away))
30:00
xxx ((29:55-31:16 no dialogue))
xxx S8: (question)
xxx ((unclear)) um ((unclear))
xxx ((unclear)) replenish the organic solvent in ((unclear))
xxx in the
xxx flask?
xxx IS2: (.) uh
xxx definite in the flask.
xxx because this is sodium carbonate right?
xxx S8: no
xxx this is the ether.
xxx IS2: oh this is ether?
xxx S8: yea=
xxx IS2: =so
xxx this is your first extraction?
xxx no
xxx S8: no
xxx (this is my final) ((unclear))
xxx IS2: ((unclear)) extraction
xxx OK
xxx so
xxx uh:
xxx what's the pH for the aqueous layer?
xxx S8: it's-

xxx IS2: still
xxx S8: still- it’s not blue yet
xxx so=
xxx IS2: =OK
xxx it’s not basic
xxx right?
xxx just
xxx OK
xxx so:
xxx this is organic layer
xxx right?=
xxx S8: =mhm
xxx IS2: and uh:
xxx S8: ((unclear))
xxx IS2: why do-why do you add more ether?
xxx S8: ((unclear)) says ((unclear))
xxx replenish the (ether) of the organic layer ((unclear))
xxx IS2: oh OK
xxx oh OK
xxx so:
xxx uh
xxx right now ((unclear))
xxx so:
xxx do y-
xxx oh
xxx you need to
xxx you need to (stay at) the: sodium carbonate
xxx right?
xxx S8: yea
xxx IS2: OK
xxx S8: and this one
xxx IS2: and the:
xxx S8: that’s my organic flask
xxx IS2: just
xxx get the:
xxx get that out,
xxx and you add this either into the flask,
xxx and you add the sodium carbonate,
xxx and uh mix.=
xxx S8: =OK
xxx got it
xxx IS2: yea ((unclear))
xxx ((continues walking around))
33:00
xxx ((32:28-33:16 no dialogue))
xxx uh:
xxx get the stopper out
xxx S12: oh
xxx I-I have a question

xxx IS2: OK
xxx ((continues walking))