Video « Calibration – Preparation of the calibration range »

Time	Text
00 :09	Woman: So, we have to make a standard range from a stock solution of copper. We need to check to avoid mistakes: we need to make a blank, the stock solution is at 1 g/L and we have to prepare solutions at 500 mg/L, 250, 100, 50 and 10. So, with the blank, it means that we need 6 flasks. Man: We only have 5 flasks of 25 ml and one of 50. Woman: Ok, so we need to get another flask of 25, we won't make a standard in the 50 ml flask. Man: It doesn't matter, it is still possible to make 50 ml, it won't change the concentration. Woman: Alright.
01 :07	Woman: First, let's check if there are pipettes and pro-pipettes available … That's alright. I think it is better to prepare them with an increasing concentration. That way, we don't need to mark the flasks because if we mark them, we'll need to clean them at the end and it's a bit annoying. So, let's start with the blank and then we go from the less concentrate to the most concentrate. Man: Ok. Man: Therefore, maybe we can use the 50 ml flask for the highest dilution, it's seem logical. In that way, we'll use a lower volume. Ok?
01 :40	Woman: So, first I'll go grab the stock solution. I will first make the blank, it is simpler. Homme: ok do it. Woman: at least, it'll be done. Man: Wait, don't use water. We need to make the standard range into nitric acid. Because if you use water, it could change the HNO_3 concentration and it could change the dilution of the solutions. Woman: You are right.
02 :01	Woman: I won't sample directly from the tank, I will use a big beaker because if the pipette is contaminated, it will contaminate all the tank and we won't be able to make our standard range. So I'll put some of it in here. Man: Do we mark it? Uff it is not necessary, we know what is in there. Woman: It is better to mark it, because it is uncoloured, we could think it's water … Just to be sure. Man: ok, let's note it.
02 :30	Woman: So, I will start by taking 10 ml, and I will repeat the process several times. Man: That's it, it is marked. Woman: Ok, I am doing the blank, it will be fast. Man: For the stock solution, do you want me to begin now? Where is it by the way? Woman: The stock solution is in the fridge, you can go grab it. Concerning the blank, it is not necessary to fill it until 25 ml but I am doing it anyway, as the others. Man: I am grabbing the stock solution and I am starting by making the 0.5 solution ok? So, we've said that this is 1 g/L …
03 :20	Women: What we can do, because I have started with the nitric acid, you add the stock solution in each flask and I put the diluent, alright? Man: Sure. Woman: First, I am finishing the blank and then I am putting a small amount of diluent in each flask to do it well. I won't put too much, it is not necessary.
04 :01	Man: Personally, I am doing the first dilution. Woman: we agree, this is the blank and then from the most diluted to the most concentrate, to be sure. Man: So, 500 … we have 1g/L so we need to divide by 2. I have a flask of 25 ml so I need 12.5 ml. I am waiting, I need the pro-pipette.

	Woman: I am almost done. In that way we don't need to write the calculation, it is just a cross product, it's not really complicated.
04 :54	Woman: But you cannot sample right now because the stock solution just came from the fridge, it is still cold. You won't get the good volumes if you sample it at 5-6 degrees. Man: So, what do we do? Woman: Well, we can go for a coffee and come back later, waiting for it to get warmer. Man: ok for me.
05 :20	Woman: First, let's put the gloves back. Ok, after a good coffee we are ready for the standard range. Man: The stock solution is not cold anymore, we can start. Woman: I prefer if I sit while I am doing my samples, I am grabbing a stool and I will sit over here. That way, you will start by adding the stock solution and I will finish by adding the acid.
06 :01	Man: Can you give me the 500 flasks? Which one is it? This one? Is it the 500 flask? Woman: Yes, it is. So, you need to dilute twice, so you need to sample … Man: 12.5 Woman: exactly.
06 :53	Man: Here we go, 12.5 ml. Woman: I will need the pro-pipette. Man: Yes, you can use it, I'll use the other one. Woman: Yes, you can take this one, it is too big for my pipette.
07 :12	Man: I am doing the second one? Woman: Which one is it? It's the 250. Yes, it is also easy. Man: Wait, how much is it? I am a bit lost … I think it would be great to write the calculation, because I am starting to be lost. Woman: No that's easy, I finish this one and we dilute it twice, don't we? Man: Well, it is not ideal … it is better to use the stock solution because if I did a mistake on this one, the mistake will be repeated on the next flask. So, the best thing to do is to use the stock solution.
07 :52	Woman: Alright. Man: And I think that we need to write the calculations because I won't be able to make them in my head. Woman: Yes, since if we make a mistake we'll have to start all over again. Let's write the calculations.
08 :08	Man: So, we have a 1 g/L solution and we want one at 250 mg/L for 25ml. Woman: Did you find it? Man: For the 250 one I got 6.25 ml, for the 100 one I got 2.5, for the 50 one I got 1.25 and for the 10 one I got 0.25 ml. Woman: Yes, I got the same. Man: So, let's go.
08 :55	Woman: Wait Mathieu! I think you made a mistake for this dilution… Man: What? What did I do? Woman: Look the colour. This is not normal, it is supposed to be less intense. Man: I did what you said … Oh wait … I put 12ml again, I forgot that we've already done the first one. Woman: That's it. It is twice less, so it is 6.25 Man: Alright. What do we do now? Woman: Well … we cannot divide it by two. We take a new flask and we redo it.
09 :31	Man: So, this time I won't make any mistake, I'll take 6.25 ml. Woman: You know what, to avoid any more mistakes, I'll write the concentrations on each flask.

	Man: Yes, it's better.
	Woman: It would be silly to be wrong again.
09 :50	Woman: So, this one is 500 mg/L
	Man: So, which one is the 250 mg/L?
	Woman: Well, you can take this one.
	Man: Thank you. So, here I need 6.25 ml.
10 :15	Man: I have a problem for the 10 because I need to sample 0.25 ml and I don't have anything to do that. Oh, but we forgot that we use a 50 ml flask! So, it means that I need to sample 0.5.
	Woman: That's right.
	Man: But I don't have enough …
	Woman: Well in that case, we don't make it.
	Man: We have to do it, we need a point to draw the calibration line. Otherwise, I could use the solution of 100 mg/L. As the stock solution is too concentrate, we could use the 100 solution and dilute it 10 times.
	Woman: Smart! And also, the taken volume will be bigger.
11 :05	Man: So, I have a flask of 50 ml, so I need to take 5 ml.
	Woman: You should write the calculation to avoid any mistakes.
	Man: So, I have a solution of 100 mg/L …
	Man: Is the solution of 100 ready?
	Woman: No! You want the solution of 100, right?
	Man: Yes.
	Woman: Wait, I have to mix it first. Because if you sample it without mixing it, the concentration will be wrong.
	Man: Ok.
	Woman: It is almost ready.
11 :45	Woman: Are you sure you need this one? Did you write the calculation?
	Man: Yes, I did. I need to take 5 ml of the solution of 100 in order to get 10 mg/L.
	Woman: This is the well mixed solution of 100.
	Man: Thank you.
11 :59	Woman: Wait, don't do that.
	Man: What?
	Woman: If your pipette is not well rinse, you will contaminate it. Put some of it in the small beaker and sample it from the beaker.
	Man: alright.
12 :21	Woman: everything is good?
	Man: Yes.
	Woman: Nice, we got a beautiful degraded blue.
	Man: Perfect, we can start the analysis.