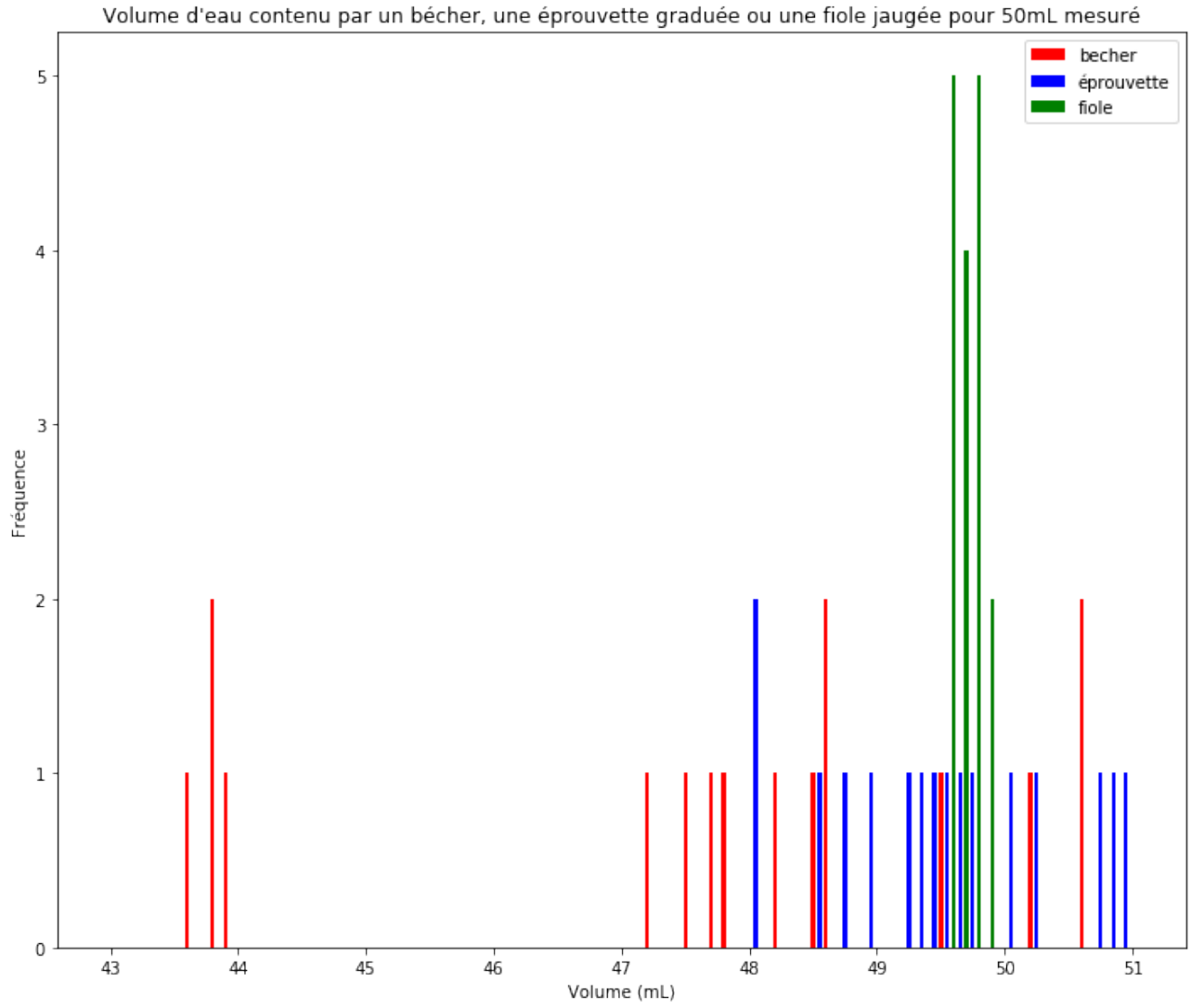
Histogramme et évaluation de l'incertitude-type de type A sur une série de mesures

In [12]:

```
import matplotlib.pyplot as plt
import numpy as np
```

In [13]:

```
Vbecher=[50.65,48.26,47.83,47.76,50.26,47.23,43.88,43.92,48.69,48.66,43.67,47.53,49.55,50.
 ↪64,43.8,48.53]
Veprouvette =[49.61,49.55,50.91,50.87,48.03,50.29,48.58,48.06,50.06,50.72,48.95,49.4,49.
 ↪21,49.31,49.78,48.77]
Vfiole=[49.74,49.77,49.71,49.75,49.52,49.8,49.61,49.56,49.65,49.65,49.52,49.64,49.74,49.
 ↪81,49.5,49.59]
#plt.hist(V,bins,range,density,weights,cumulative,bottom,histtype,␣
 ↪align,orientation,rwidth,log,color,label,stacked,normed,data)
plt.figure(figsize=(12,10))
plt.hist(Vbecher,bins=80,range=(43,51),align="left",rwidth=0.3,color="r",label="becher")
plt.hist(Veprouvette,bins=80,range=(43,51),align="mid",rwidth=0.
 ↪3,color="b",label="éprouvette")
plt.hist(Vfiole,bins=80,range=(43,51),align="right",rwidth=0.3,color="g",label="fiole")
plt.title("Volume d'eau contenu par un bécher, une éprouvette graduée ou une fiole jaugée␣
 ↪pour 50mL mesuré")
plt.xlabel("Volume (mL)")
plt.ylabel("Fréquence")
plt.legend()
plt.show()
```



In [14]:

```
def statistique(x):
    moy=np.mean(x)
    ecarttype=np.std(x)
    effectif=len(x)
    incertitudetype=ecarttype/np.sqrt(effectif)
    return(moy,ecarttype,effectif,incertitudetype)
```

In [16]:

```
statistique(Vbecher)
```

Out [16]:

```
(47.553749999999994, 2.378105535399974, 16, 0.5945263838499935)
```

In [17]:

```
statistique(Veprouvette)
```

Out [17]:

```
(49.506249999999994, 0.8814042418209694, 16, 0.22035106045524236)
```

In [18]:

```
statistique(Vfiole)
```

Out [18]:

```
(49.66, 0.10012492197250353, 16, 0.025031230493125882)
```

In [ ]:

```

```