Blob_upload

April 27, 2016

1 MDCS REST api demo – data from Diffusion couple

In [1]:
```
import pip

        requires = ['numpy','xmltodict']

        installed_packages = pip.get_installed_distributions()
        installed_packages_list = sorted(["%s==%s" % (i.key, i.version) for i in installed_packages])

        matching = [[libs for libs in installed_packages_list if x in libs] for x in requires]

        if len(matching) == len(requires):
            print "requirement fullfilled"
        else:
            print "something is missing"
```

```
requirement fullfilled
```

NOTE: if the check is failed, execute the following cell

In [ ]:
```
#!conda install numpy
        #!pip install xmltodict
```

In [2]:
```
import os

        file_check = ['DataModelDict.py','GE-DiffusionCouple-IN100-IN718.xml','GE-DiffusionCouple-IN718
                      ,'GE-DiffusionCouple-R88-R95.xml','mdcs','data','fig']

        files = os.listdir(".")
        matching = filter(None, [[fs for fs in files if x in fs] for x in file_check])


        if len(matching) == len(file_check):
            print "files in the folder"
        else:
            print "something is missing"
```

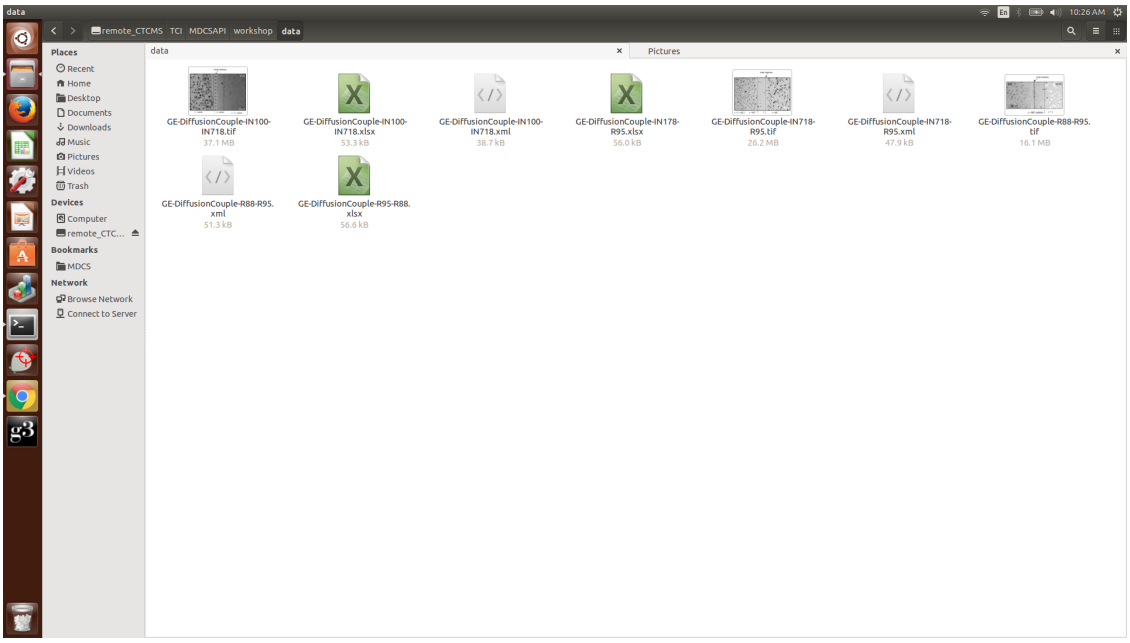
```
files in the folder
```

In [3]:
```
# standard python libraries
        import numpy as np
        import glob
        import requests
        import xmltodict
```

```
# ------------------------------------------- Matplotlib for plotting
                                              # NEED to be installed (anaconda)
# http://matplotlib.org/
import matplotlib.pyplot as plt
import matplotlib.colorbar as clb
import matplotlib.patches as mpatches
import matplotlib.lines as mlines
import matplotlib.gridspec as gridspec
from matplotlib import ticker
from matplotlib.ticker import LogLocator
%matplotlib inline


# customized library by Zachary Trautt
import mdcs
# customized library by Lucas Hale
from DataModelDict import DataModelDict
```

In [4]:
```
from IPython.display import Image
Image("fig/file_problem.png", width=600)
```

Out[4]:



1.1 How to manage .xml and image files? – theupdate files are prepared in the folder “data”

1.1.1 steps:

1.1.2 (1) upload the draft XMLs

1.1.3 (2) upload image files

1.1.4 (3) query the data in MDCS

1.1.5 (4) update the content with image URL

1.1.6 (5) delete the draft XMLs from MDCS

1.1.7 (6) upload the updated XMLs

```
In [5]: # ---- setup user information to sign in MDCS
        USER = "admin"
        PSWD = "admin"
        MDCS_URL = "http://127.0.0.1:8000"
```

1.1.8 obtain the file names

```
In [7]: xml_files = glob.glob("data/*.xml")
        print "Files:  ",len(xml_files), xml_files

        filetitle = []
        xmlfile = []
        fig_files = []

        for i in range(len(xml_files)):
            filetitle.append(xml_files[i][5:-4])
            fig_files.append(str(xml_files[i][0:len(xml_files[i])-3] + 'tif'))

        print "XML files: ",filetitle
        print "Image files: ",fig_files
```

```
Files:   3 ['data/GE-DiffusionCouple-R88-R95.xml', 'data/GE-DiffusionCouple-IN718-R95.xml', 'data/GE-Di
XML files:  ['GE-DiffusionCouple-R88-R95', 'GE-DiffusionCouple-IN718-R95', 'GE-DiffusionCouple-IN100-IN
Image files:  ['data/GE-DiffusionCouple-R88-R95.tif', 'data/GE-DiffusionCouple-IN718-R95.tif', 'data/GE-
```

1.1.9 Using blob function to upload the image files and return the URL

```
In [8]: figURL = []

        for i in range(len(xml_files)):
            figURL.append(mdcs.blob.upload(fig_files[i],MDCS_URL,USER,PSWD,'cert'))

        print figURL
```

```
[u'http://127.0.0.1:8000/rest/blob?id=5720f57a1ff0f31620f6cc42', u'http://127.0.0.1:8000/rest/blob?id=57
```

1.1.10 upload the XML files

make suer the template_title is correct on your MDCS instance

```
In [9]: for i in range(len(xml_files)):
            print mdcs.curate_as(xml_files[i],filetitle[i],MDCS_URL, \
                USER,PSWD,'cert',template_title="mod_demo_diffusion0224")
```

```
created
created
created
```

1.1.11 demo the function "query" to search the data by filetitles in database:

1.1.12 (1) the data content is stored in python list "qres"

1.1.13 (2) the specific "id" assigned by MDCS is kept in file_id

```
In [10]: qres = []
         file_id = []

         for i in range(len(xml_files)):
             content = mdcs.explore.query(MDCS_URL,USER,PSWD,'cert',  \
                                          None,str({'title':filetitle[i]}))
             qres.append(xmltodict.parse(content[0]['content']))
             file_id.append(content[0]['_id'])
```

1.1.14 update XML files with image URL

```
In [11]: res = []

         for i in range(len(xml_files)):
             qres[i]['experiment']['experimentType']['chemicalDiffusivity'] \
             ['dataAnalysis']['micrographOfStructure']['fileExtension'] = figURL[i]
             res.append(xmltodict.unparse(qres[i]))
```

1.2 output the content as new XMLs

1.2.1 WARNING: Occassionally, Jupyter may cause issues to output large file. You may try to run this cell multiple times.

```
In [12]: filename = []

         # write information to interdiffusion.xml
         for i in range(len(xml_files)):
             filename.append(str(filetitle[i] + str('.xml')))
             diffusion = open(filename[i], 'w')
             diffusion.write(res[0].encode('utf8'))
             diffusion.close()
```

1.3 delete the old XMLs in MDCS

```
In [13]: for i in range(len(xml_files)):
             mdcs.explore.delete(file_id[i],MDCS_URL,USER,PSWD,cert=None)
```

1.4 upload the revised XMLs

```
In [14]: for i in range(len(xml_files)):
             print filename[i],mdcs.curate_as(filename[i],filetitle[i]
             ,MDCS_URL,USER,PSWD,'cert',template_title="mod_demo_diffusion0224")
```

```
GE-DiffusionCouple-R88-R95.xml created
GE-DiffusionCouple-IN718-R95.xml created
GE-DiffusionCouple-IN100-IN718.xml created
```

1.5 Vidualize data

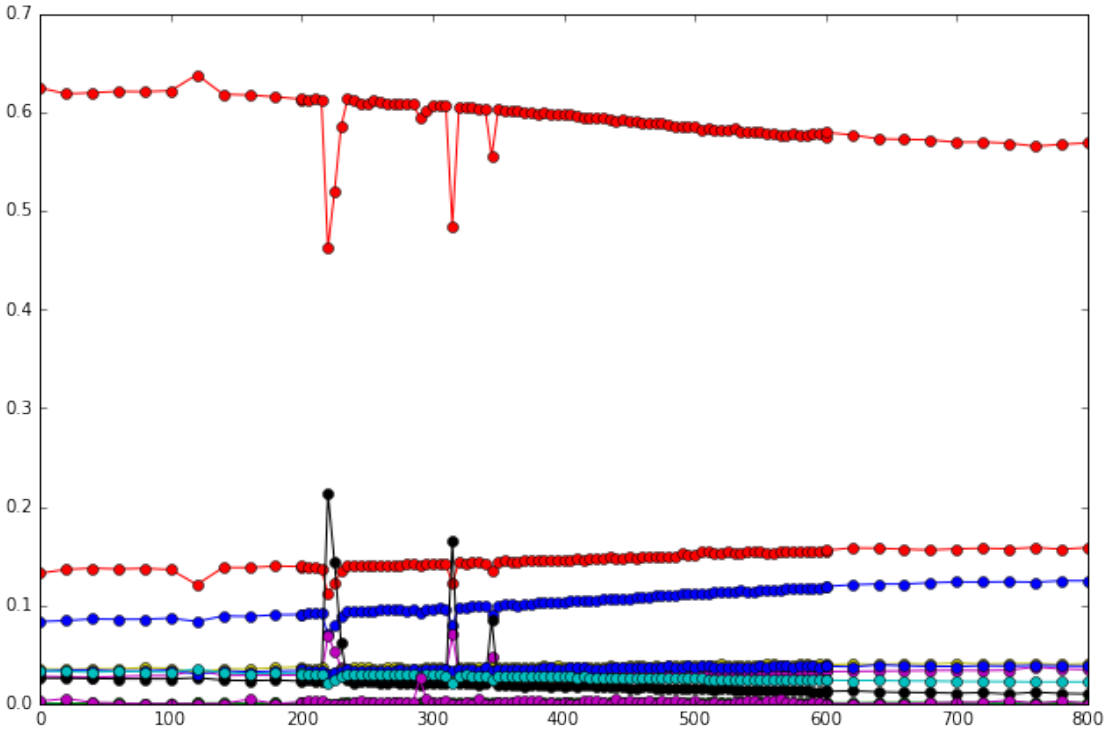
1.5.1 query, load, and plot the data

In [15]:
```
content = mdcs.explore.query(MDCS_URL,USER,PSWD,'cert',
                                    None,str({'title':filetitle[0]}))
qdata = DataModelDict(content[0]['content'])

table = qdata.find('table')
```

In [16]:
```
distable = []

for row in table['rows'].iterlist('row'):
    disrow = []
    for column in row.iterlist('column'):
        disrow.append(column['#text'])

    distable.append(disrow)

del distable[0]
```

1.6 Plot the data

In [17]:
```
distable = np.array(distable)

fig, ax = plt.subplots(figsize=(9, 6))
for i in range(2,len(distable[0])):
    ax.plot(distable[:,0],distable[:,i],'o-')

fig.tight_layout()
plt.show()
```



In [ ]: