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**Supporting information for article:**

**Beam and sample movement compensation for robust spectro-microscopy measurements on a hard X-ray nanoprobe**

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**Control Loop**

```
Initialise  $DCM_{pitch}, DCM_{roll}, Mirror_{pitch}$ 
Initialise  $PID, Intensity_{max} = \emptyset$ ,
Set k oscillation steps,  $S_k = [s_1, \dots, s_k]$ 
Read  $X, Y$ 
While True:
  for  $i = 1, \dots, k$  do
    Update  $PID_x, PID_y$  parameters from  $X, Y$ 
    Update  $DCM_{roll}, Mirror_{pitch}$ 
     $DCM_{pitch} = DCM_{pitch} + s_i$ 
    Read  $X, Y, Intensity$ 
    if  $Intensity_{max} < Intensity$  then
       $s_{max} = s_i$ 
    end if
  end for
   $DCM_{pitch} = DCM_{pitch} + s_{max}$ 
```

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**Figure S1** Control Loop used for maximizing intensity and setting the X, Y beam position.