SUPPORTING INFORMATION

3D Analysis of Helium-3 Nanobubbles in Palladium Aged under Tritium by Electron Tomography

AUTHOR NAMES

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KEYWORDS

Electron tomography, Nanobubbles, Palladium tritide, Distances

Illustration of the post-processing steps for a tomography acquisition of the palladium powder aged 8.5 years under tritium.

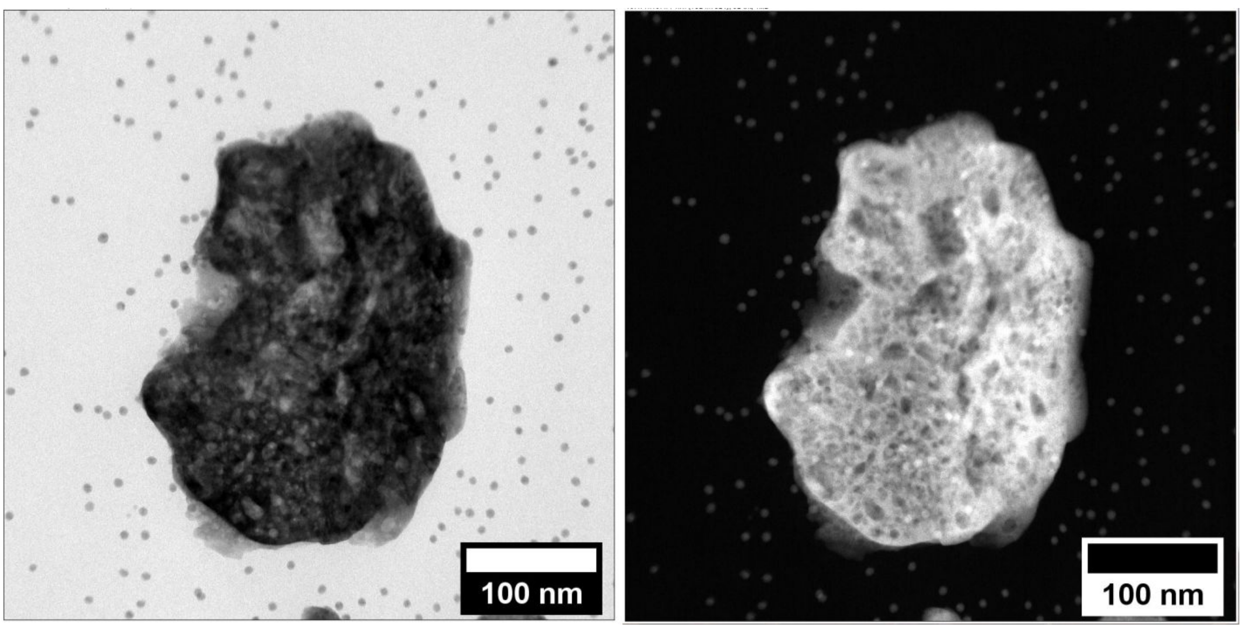

Figure SI - 1 – Bright Field (left) and High Angle Annular Dark Field (right) images at 0° tilt from the electron tomography series of palladium sample aged under tritium during 8.5 years. The pixel size is 0.45 nm. The image size is 1024x1024 in pixel unit.

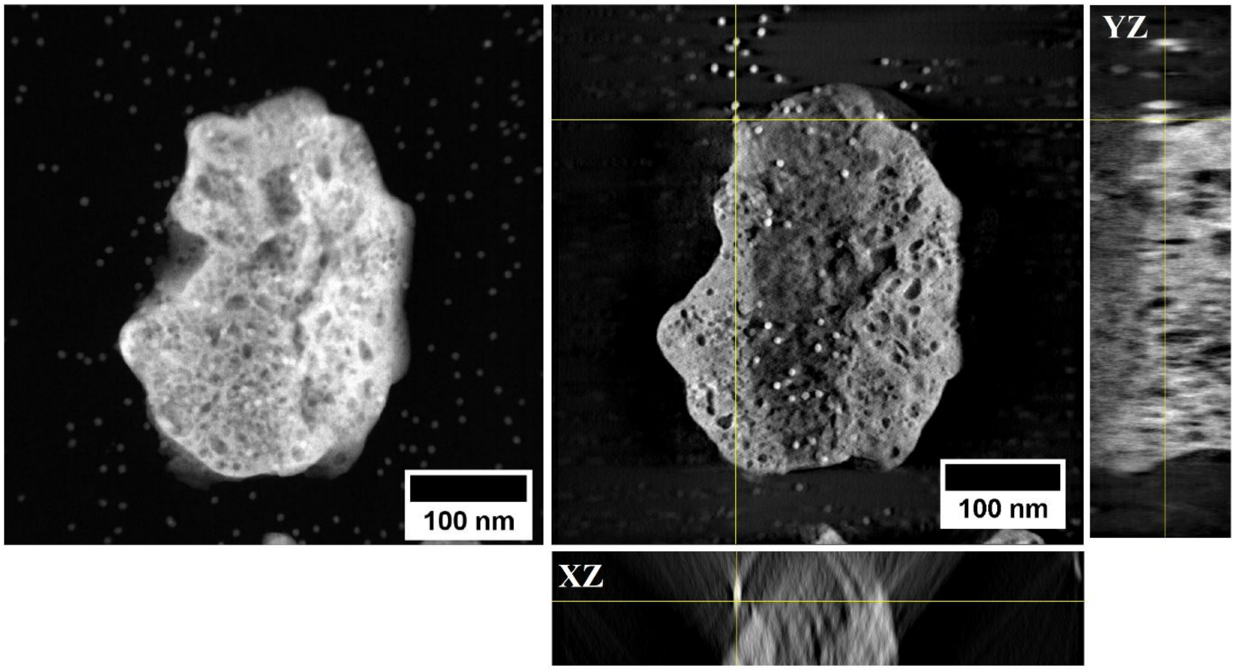

Figure SI - 2 – One of the HAADF images from the corresponding tilt series acquired between, the tilting angles are -64˚ and +60˚ with a 2˚ increment (left) and a typical (X,Y) slice through the calculated reconstruction (right)and the associated (X,Z) and (Y,Z) projections for palladium aged 8.5 years under tritium. The size of the image is 1024x1024 in pixel unit and the pixel size is 0.45 nm.

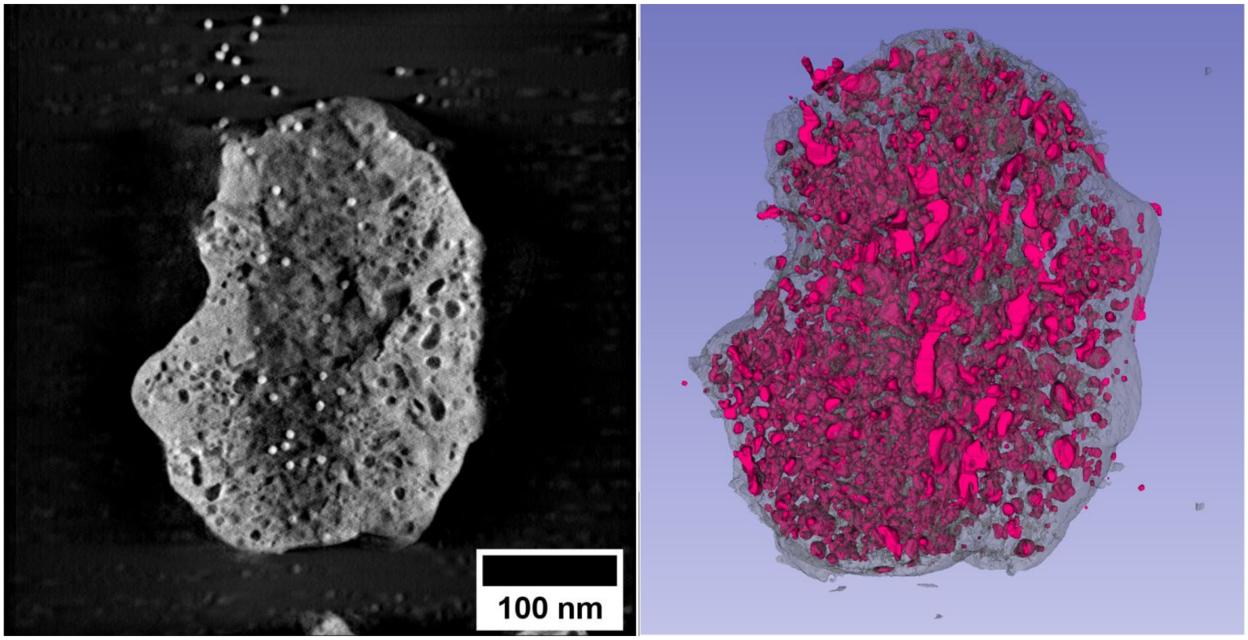

Figure SI - 3 – Typical slice through the reconstruction (left) and the segmentation (right) of a palladium particle aged 8.5 years under tritium. For this tomography the tilting angles are between -64° and +60°. The size of the image is 1024x1024 in pixel unit and the pixel size is 0.45 nm.

Homemade script written in Fortran to calculate the distances between bubbles.

```
INTEGER iB(1:5000),jB(1:5000),kB(1:5000)

  REAL Dmin(1:5000)

  OPEN(1,FILE='bub.dat',STATUS='old')

  OPEN(2,FILE='distB.dat',STATUS='replace')

  WRITE(*,*) 'Nombre de bulles ?'

  READ(*,*) NB

  DO n=1,NB

    READ(1,*) i,iB(n),jB(n),kB(n)

  END DO

  DO n=1,NB

    S=1.e12

    DO n1=1,NB

      IF (n1 == n) GOTO 50

      S1=((iB(n)-iB(n1))**2)+((jB(n)-jB(n1))**2)+((kB(n)-kB(n1))**2)
```

```
      IF (S1 < S) S=S1
50    END DO
     Dmin(n)=SQRT(S)
     WRITE(2,100) Dmin(n)
   END DO
100 FORMAT(F13.3)
END PROGRAM
```

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Author Contributions

The manuscript was written through contributions of all authors. All authors have given approval to the final version of the manuscript. ‡These authors contributed equally.

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