

# SEM - Tescan Mira3 I

Date: 2019-10-17

Tags: Training SEM PSD 07/10/2019Synth

Created by: James Bird

1 / 7

Goal : Obtain micrographs appropriate for calculating a particle size distribution (PSD) and investigate vacuum oven-dried film morphology

Procedure :

- Samples (see Exp. 'SEM stub preparation for PSD IV' & 'SEM stub preparation for film characterisation') loaded into SEM chamber and vacuum acquired
- 10 or 20 kV accelerating voltage set for electron beam
- WD between either roughly 4, 8 or 16 mm (analytical working distance (AWD) is 15 mm)
- Everhart-Thornley secondary electron (SE) detector and in-beam SE detector employed

Results :

Sample	Filename prefix
Vacuum oven-dried film	JB-Ti3C2 film
MXene product from 07/10/2019 synthesis (concentration unknown)	Ti3C2

Film morphology clearly imaged at various magnifications. Film roughness evident, although lack of sample tracking means differentiation between film faces (substrate-facing or opposing) can only be insinuated. Torn film section clearly shows layered microstructure, as anticipated for restacked nanoparticles. Imaging of dropcast samples gave micrographs better suited to particle size distribution analyses than in previous attempts, although imaging conditions can still be further improved to optimise MXene/MAX/substrate contrast.

.tif files are micrographs, .hdr files are complementary data files for each micrograph.

# SEM - Tescan Mira3 I

Date: 2019-10-17

Tags: *Training SEM PSD 07/10/2019Synth*

Created by: James Bird

2 / 7

## Attached files

Ti3C20011-tif.hdr

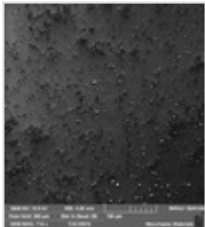
sha256: 9b31c46e2604c561681179a933536189a6c720ee80781586077eccf2c7bdf393

Ti3C20012-tif.hdr

sha256: 77e362f26c9bd50bc03693bb7004d0f4eb19bb930d05ed06029f650ce49a0ac2

Ti3C20012.tif

sha256: 44977c0b923a2f1a5ae4e36dd201e5b8e888fa5b89df767feac7870ec95d0d89

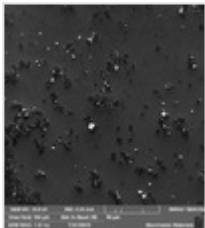


Ti3C20013-tif.hdr

sha256: 7d788cdde33ee9b47b987c804b8a165d735ae0ac26e18aed4b0041ef0279a5fc

Ti3C20013.tif

sha256: 78f25819653fc4e10f984a9998d6a38811205ee51cab8314c05bd1145a34b3bc



Ti3C20014-tif.hdr

sha256: 6348f6a853e9fe22b05aeb9d3bf5846f5abb859227f3bd6b5e506b431c354ce4

Ti3C20014.tif

sha256: eaa3569ea1be23b82e70b47fbd79a8bb918bc248bd8b6de1f96db64c551b5ba2

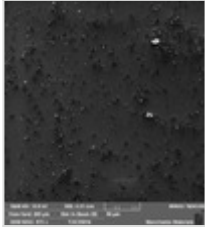
# SEM - Tescan Mira3 I

Date: 2019-10-17

Tags: Training SEM PSD 07/10/2019Synth

Created by: James Bird

3 / 7

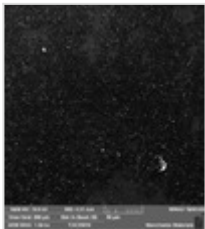


Ti3C20015-tif.hdr

sha256: 08a21680c5fdb70a2ea1be0d48bc1f690686c31457285bb0f5c5be0e105e3d2f

Ti3C20015.tif

sha256: 62c061c209c82a43ba1c9cb51de3214c3467027b8ef89e6b20c0c363367a97da

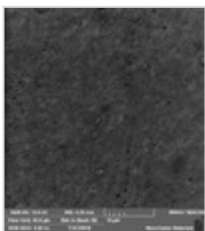


Ti3C20016-tif.hdr

sha256: b09650f1e3a10cae46de8b62f798c845e9b327c9af01745bdaa583bcc9926dce

Ti3C20016.tif

sha256: dc98bf54a99b0ae40036908abb1a3be821d25ed0be874c50070616c21c0b2690



Ti3C20017-tif.hdr

sha256: 0b885e5f989cfd6dc66b13858d95d7705bd5c304532749d04264cdffbd8764a

Ti3C20017.tif

sha256: 7bfca395fd730cab98c660896bcc43d53cbb964358807ae8a72748e37dc8e991

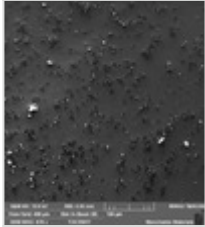
# SEM - Tescan Mira3 I

Date: 2019-10-17

Tags: *Training SEM PSD 07/10/2019Synth*

Created by: James Bird

4 / 7

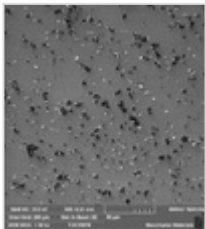


Ti3C20018-tif.hdr

sha256: 3983bfb7f056624613d5954a67e733b4e76bc5a21b4ac9478654773d3cad19a6

Ti3C20018.tif

sha256: 8c31a18462cd39e082c7821e1bd39b82300ae0b82cc89cd30985522e02e8a926

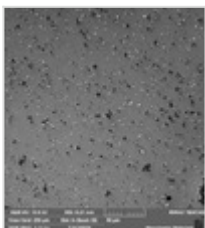


Ti3C20019-tif.hdr

sha256: 5a9e8a31d2b900506bcfd6146c7220d0e747bbe50b346fb81cc5a794764b5df7

Ti3C20019.tif

sha256: 4b3348af823442eb52092e4db5c994b9e480bd2acc5fbf66412d36659e0faf1f



JB-Ti3C2-film0002-tif.hdr

sha256: d0e9052ff5f707e076a01420565b1f5e4648f7e37fbe3d2ba8e22a1dce2083ea

JB-Ti3C2-film0003.tif

sha256: 088d9a65f133cf2997258b4bbe1a74b9d3640cfe45923eb168219774377f7b0b

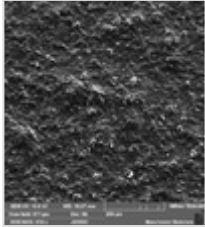
# SEM - Tescan Mira3 I

Date: 2019-10-17

Tags: Training SEM PSD 07/10/2019Synth

Created by: James Bird

5 / 7

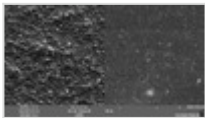


JB-Ti3C2-film0003-tif.hdr

sha256: d9cac9262faad2c6b6e6cb30593229d9ba388429c3142a26e7c7a17a917fa13c

JB-Ti3C2-film0002.tif

sha256: 96b2c9037b0b8d37bd19d434ed49fbf16feb8f31adbe17f7db5247291a466cba

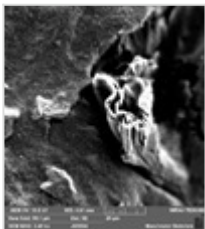


JB-Ti3C2-film0004-tif.hdr

sha256: 88e95d5bd42ab9abfbba05d0226b937062e2bb12431536165f15209139392d1d

JB-Ti3C2-film0004.tif

sha256: def2142e6a0690d8d8fa2310ca8d0b9552466915bd217afeb033aea9d4e0c3d2

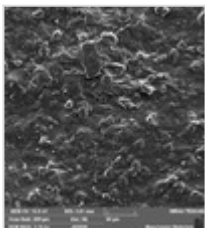


JB-Ti3C2-film0005-tif.hdr

sha256: e8389654b7c711efc3d17744a806edc717c791412606b5b0f8fc84201b359e4a

JB-Ti3C2-film0005.tif

sha256: dd1a0812dd045d8f57ac43b508c27100c2399882a5ec8790bbc338102bcff49c



# SEM - Tescan Mira3 I

Date: 2019-10-17

Tags: Training SEM PSD 07/10/2019Synth

Created by: James Bird

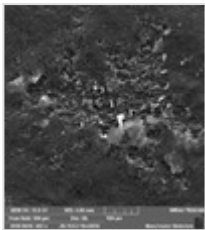
6 / 7

JB-Ti3C2-film0006-tif.hdr

sha256: f3e7dab04ef70da4b174971a32533430f2bea67be86bfe20103d61fd3ff1bfc1

JB-Ti3C2-film0006.tif

sha256: effbcd3af22a638c465d1444d8f43cc83a7ca567e61a4383a147dd067a37393d

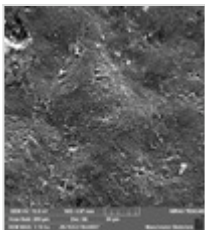


JB-Ti3C2-film0007-tif.hdr

sha256: dab740db4f4622a67a9578d340d277ab2f816e24854a916b1cca9f682c2802b0

JB-Ti3C2-film0007.tif

sha256: abbd764c0cff15c033b027584376e1e378243a61fd7a6798fadbfa2030bef14d

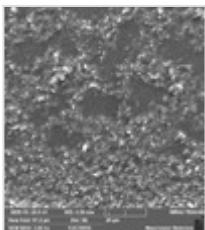


Ti3C20008-tif.hdr

sha256: 872f64463ac79e3a01c4147eea3c54b1e009bf3bbc2a9b7cb4ed17c227ec0abf

Ti3C20008.tif

sha256: 3fcd4fbaaa10f1af840907258038fc1899fdc8f19d7e213466a04283136f9db9



Ti3C20009-tif.hdr

sha256: 269ebac3f35c9f22104fa2d665b0a7e810705f12e2588465e9014dbbecaea348

Ti3C20010.tif

# SEM - Tescan Mira3 I

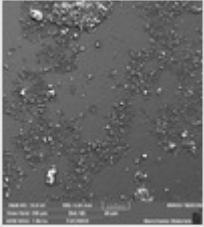
Date: 2019-10-17

Tags: *Training SEM PSD 07/10/2019Synth*

Created by: James Bird

7 / 7

sha256: 4cb81eada579f39c4cc9aa4657937aa11e22ae11d9b1b71048264d5f9df886cb

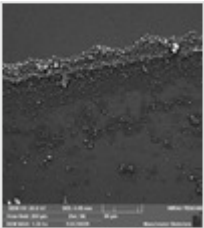


Ti3C20010-tif.hdr

sha256: 0d802c07d8396fafa9cc0494f2dab1eb11259673fab44cdd61b409462b81d911

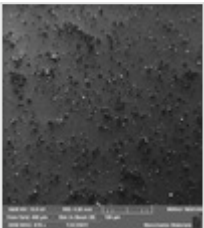
Ti3C20009.tif

sha256: f1916a3f6472e28c5539a9ef54599bfa49bd2d75ae8d8bf57aa0b755a3c06229



Ti3C20011.tif

sha256: 5b9b789d7971ed52a2ede1621285c6d421d039a633d5943ba63d4591b1a13fdd



Unique eLabID: 20221012-64240c1dfb2775f77f97c75c068a024b9383b758

Link: <https://frankel-elab.manchester.ac.uk/experiments.php?mode=view&id=27>