# Supporting Information

for

# Multicomponent reaction access to complex quinolines via oxidation of the Povarov adducts

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# Experimental details

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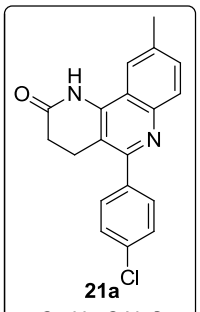
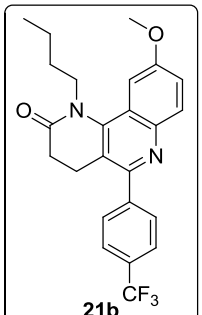
**5-(4-Chlorophenyl)-9-methyl-3,4-dihydrobenzo[h][1,6]naphthyridin-2(1*H*)-one (21a)**




**21a**
$C_{19}H_{15}ClN_2O$
MW: 322,79

Following the general procedure A, the oxidation of **20a**,**20a'**, afforded compound **21a** as a white solid (22%).
Following the general procedure C for 5h with Wako $MnO_2$, the oxidation of **20a**,**20a'**, afforded compound **21a** as a white solid (71%). The spectroscopic data for this compound perfectly matches the published data [12].

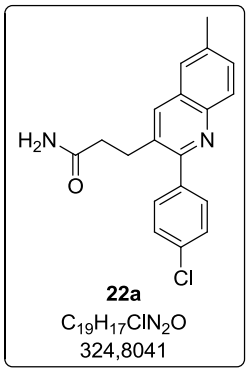
**Butyl-9-methoxy-5-[4-(trifluoromethyl)phenyl]-3,4 dihydrobenzo[h][1,6]naphthyridin-2(1*H*)-one (21b)**




**21b**
$C_{24}H_{23}F_3N_2O_2$
MW: 428,45

Following the general procedure A, the oxidation of **20b**,**20b'**, afforded compound **21b** as a purple solid (84%).
Following the general procedure C for 8h with Wako $MnO_2$, the oxidation of **20b**,**20b'**, afforded compound **21b** as a purple solid (41%). The spectroscopic data for this compound perfectly matches the published data [12].

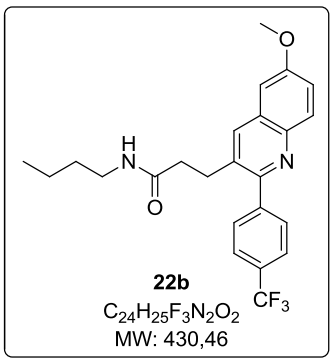
**3-[2-(4-Chlorophenyl)-6-methylquinolin-3-yl]propanamide (22a)**




**22a**
$C_{19}H_{17}ClN_2O$
324,8041

Following the general procedure B, the treatment of **20a**,**20a'** afforded compound **22a** as a white solid (49%).
**$^1$H NMR** (400 MHz, $CDCl_3$) $\delta$ 8.00–7.93 (m, 2H), 7.55 (s, 1H), 7.51 (dd, *J*= 8.6, 1.9 Hz, 1H), 7.48–7.40 (m, 4H), 5.49 (br s, 1H), 5.39 (br s, 1H), 3.14–3.08 (m, 2H), 2.54 (s, 3H), 2.36–2.31 (m, 2H); **$^{13}$C NMR** (100 MHz, $CDCl_3$) $\delta$ 173.7, 158.1, 145.4, 139.2, 136.9, 135.9, 134.5, 131.9, 131.8, 130.3, 128.9, 128.8, 127.7, 126.0, 36.0, 28.5, 21.8 ppm. **IR** (film) $\nu_{max}$: 3353, 3186, 3051, 2911, 2847, 1662, 1617, 1482, 1437, 1405, 1373, 1296, 1085, 1002, 918, 822, 133 $cm^{-1}$. **HRMS**: calcd for $C_{19}H_{18}ClN_2O$, 325.1102 ($M+H^+$); found, 325.1101.

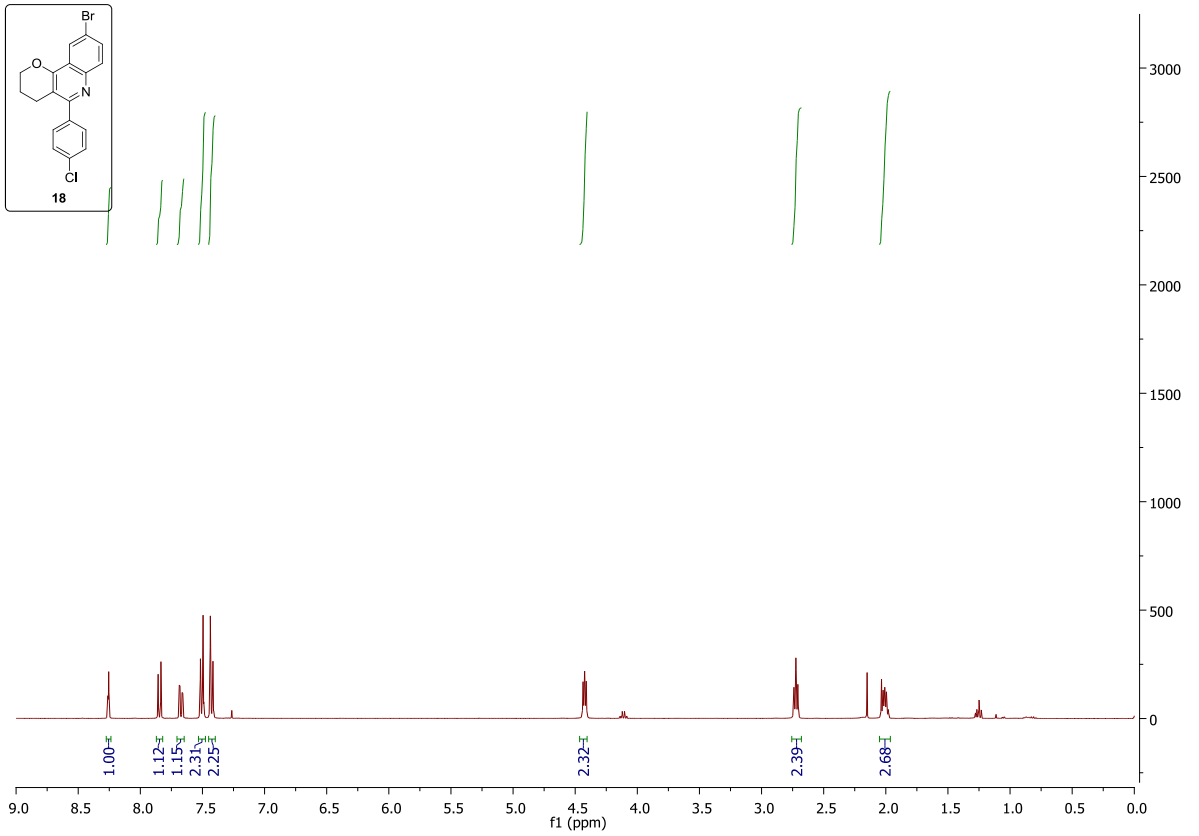
**3-[6-Methoxy-2-{4-(trifluoromethyl)phenyl}quinolin-3-yl]-*N*-pentylpropanamide (22b)**

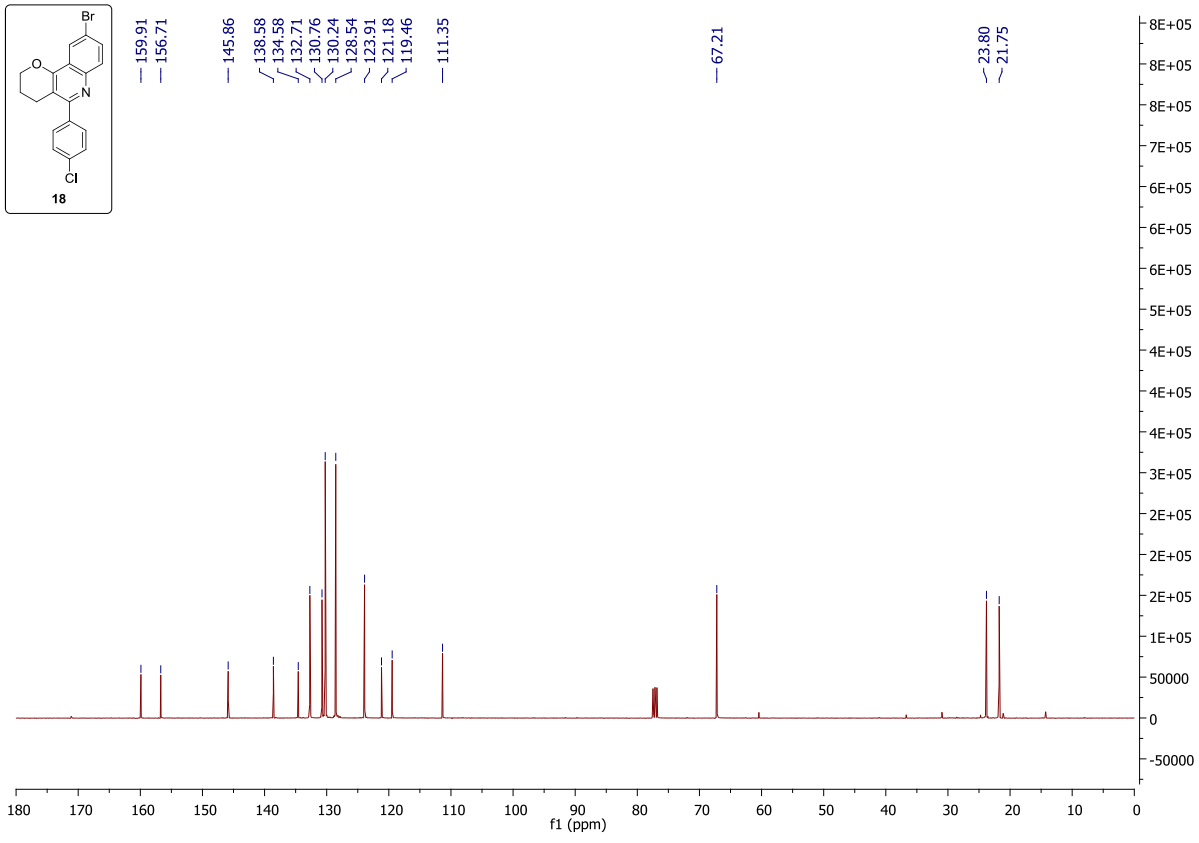



**22b**
$C_{24}H_{25}F_3N_2O_2$
MW: 430,46

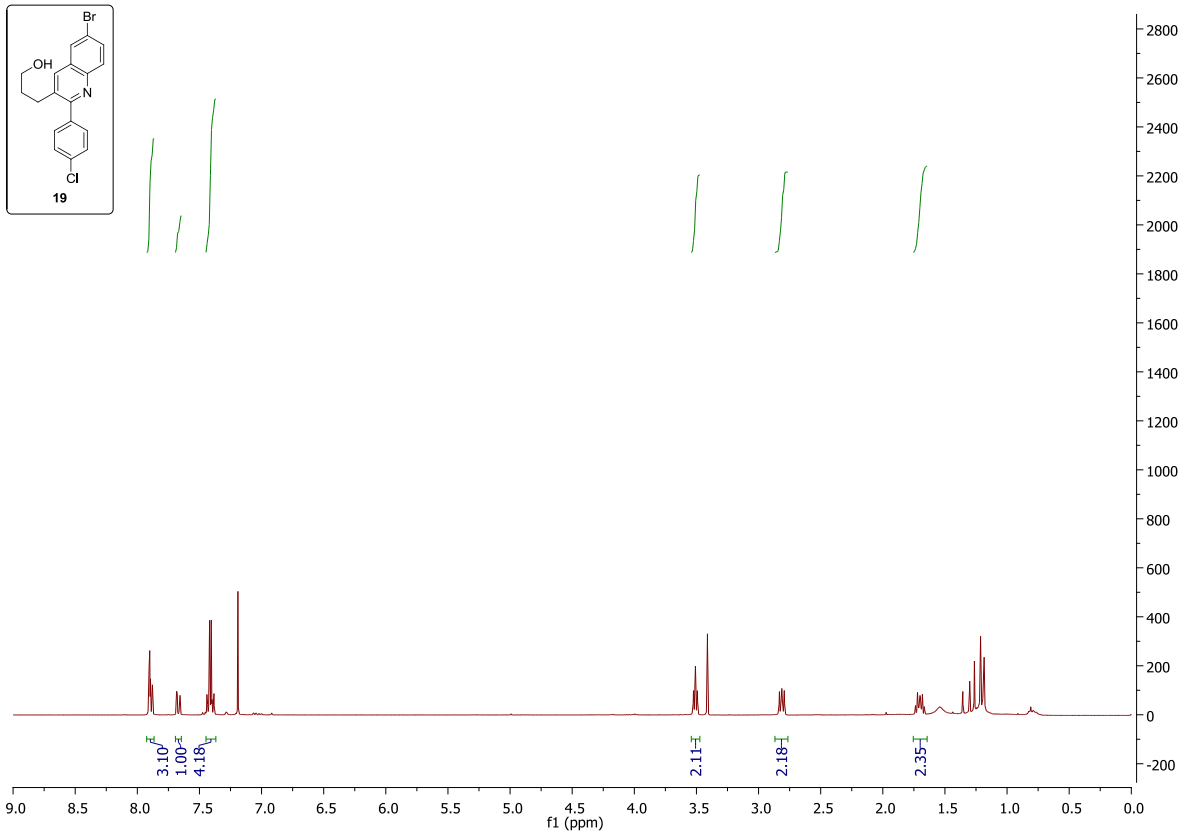
Following the general procedure B, the treatment of **20b**,**20b'** afforded compound **22b** as a white solid (49%). The spectroscopic data for this compound perfectly matches the published data [12].

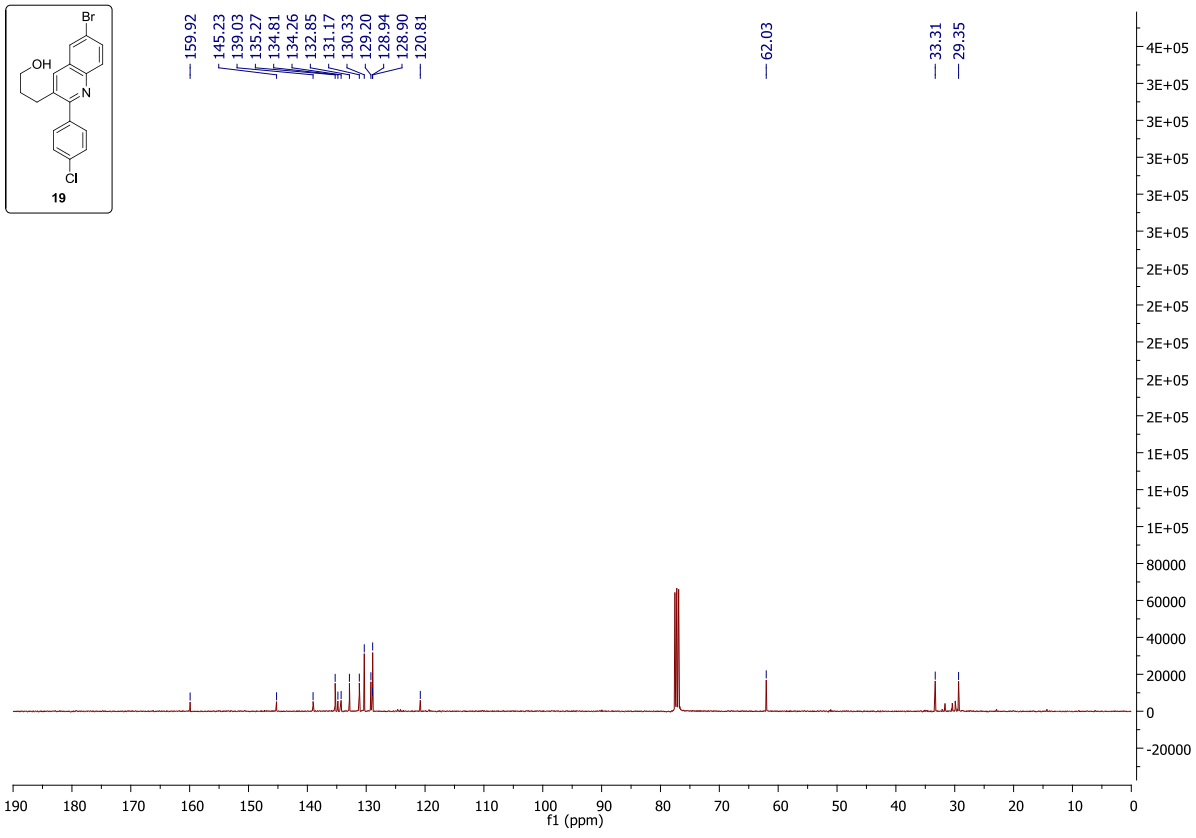
## 9-Bromo-5-(4-chlorophenyl)-3,4-dihydro-2H-pyrano[3,2-c]quinoline (18)



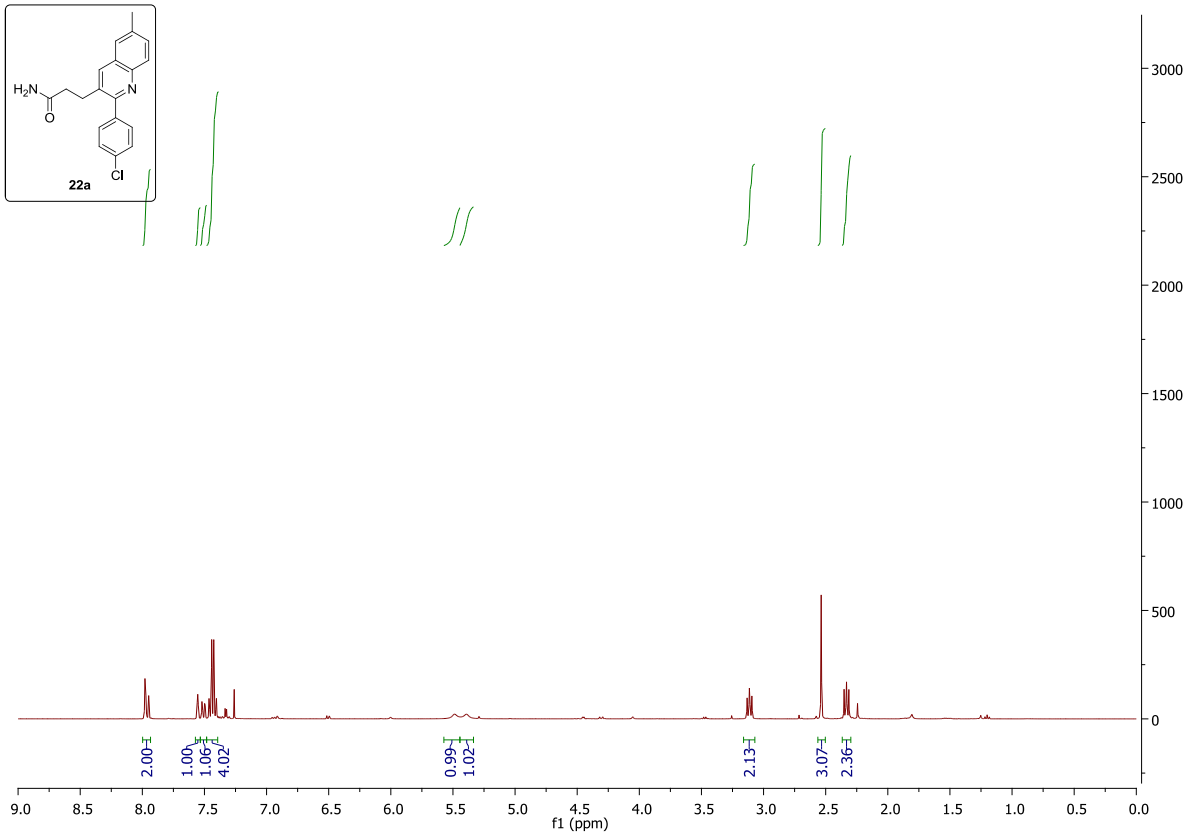



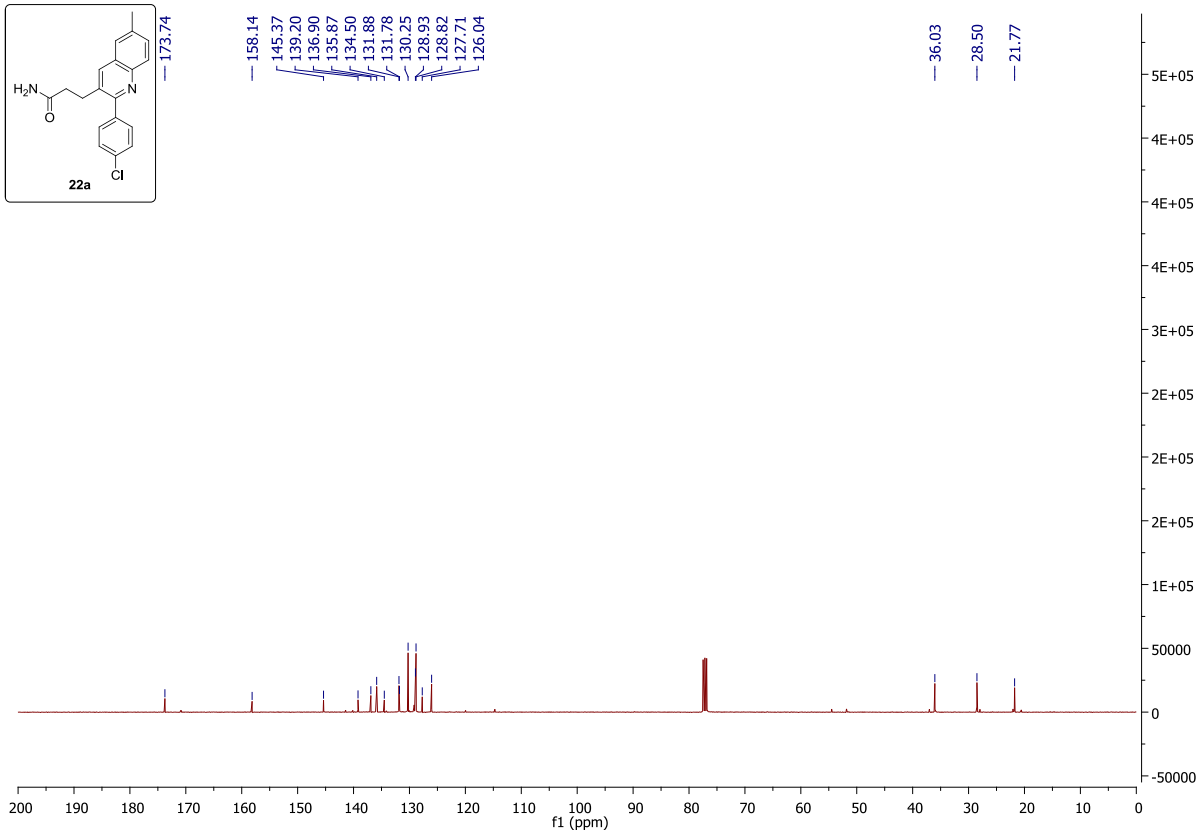
## 3-(6-Bromo-2-(4-chlorophenyl)quinolin-3-yl)propan-1-ol (19)



## 3-[2-(4-Chlorophenyl)-6-methylquinolin-3-yl]propanamide (22a)



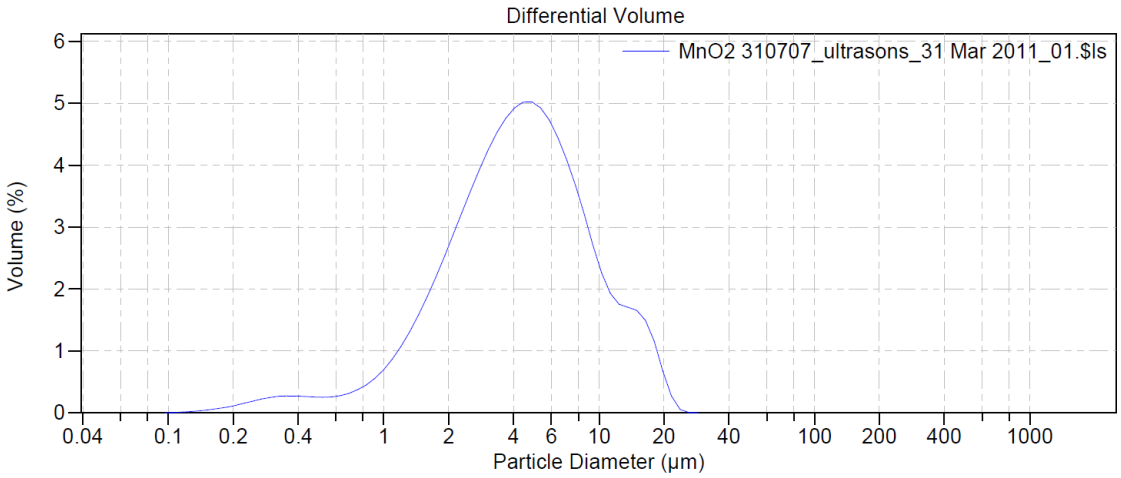
**$MnO_2$ Particle size study:**

All the manganese dioxide samples were analyzed with a LS™ 13 320 series Laser diffraction particle size analyzer to determine the particle size.

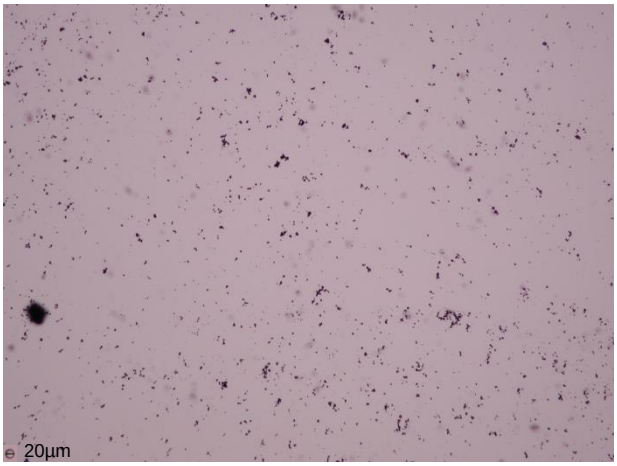
| Reagent code | $d_{10}$ (µm) | $d_{50}$ (µm) | $d_{90}$ (µm) | <75% | <95% | <10 µm (%) |
|---|---|---|---|---|---|---|
| 310700 | 1.475 | 4.302 | 11.16 | 7.022 | 14.53 | 87.5 |
| 243442 | 77.66 | 138.4 | 173.2 | 156.8 | 183.2 | 1.57 |
| 217646 | 0.577 | 4.240 | 16.04 | 9.583 | 19.69 | 75.3 |
| 213490010 | 1.509 | 7.555 | 37.30 | 18.16 | 51.39 | 57.3 |
| 138-09675 | 2.743 | 25.70 | 63.10 | 44.77 | 73.05 | 21.6 |
| Old Sample | 0.932 | 11.46 | 47.78 | 24.40 | 66.57 | 47.7 |

$d_{xx}$ (µm) indicates the size of particle below which XX% of the sample lies (50% - median diameter)

**Aldrich (310700):**

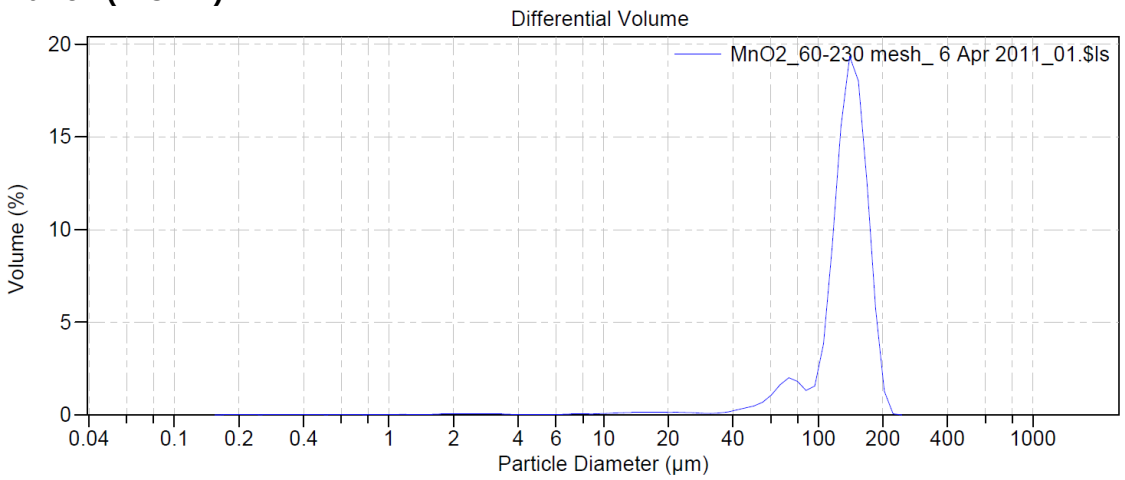



$d_{10}$: 1.475 µm $d_{50}$: 4.302 µm $d_{90}$: 11.16 µm
<75% 7.022 µm <95% 14.53 µm
<10 µm 87.5%

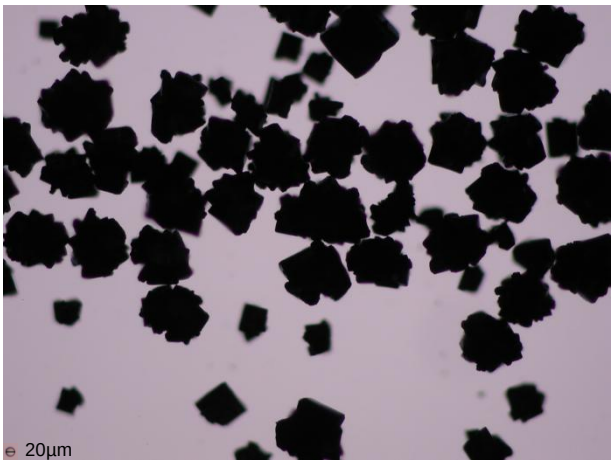



10x

**Aldrich (243442):**

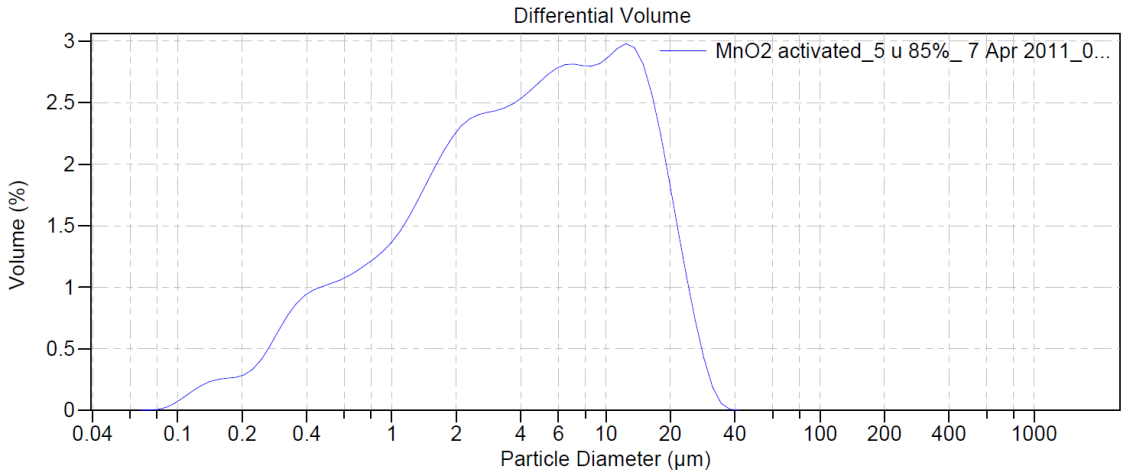



$d_{10}$: 77.66 µm $d_{50}$: 138.4 µm $d_{90}$: 173.2 µm
<75% 156.8 µm <95% 183.2 µm
<10 µm 1.57%

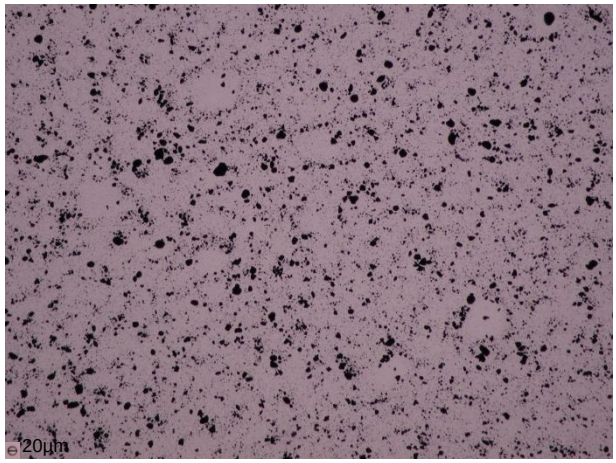



10x

**Aldrich (217646):**

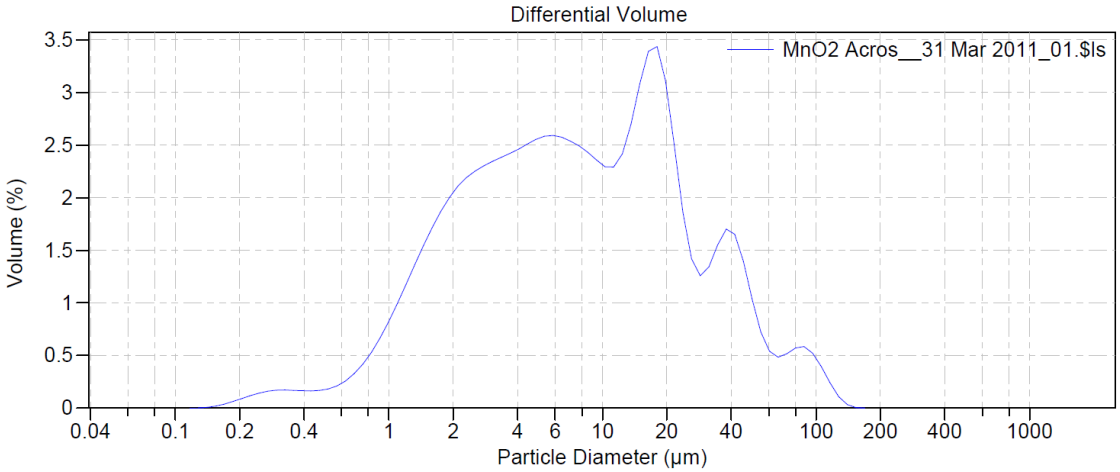



$d_{10}$: 0.577 µm $d_{50}$: 4.240 µm $d_{90}$: 16.04 µm
<75% 9.883 µm <95% 19.69 µm
<10 µm 75.3%

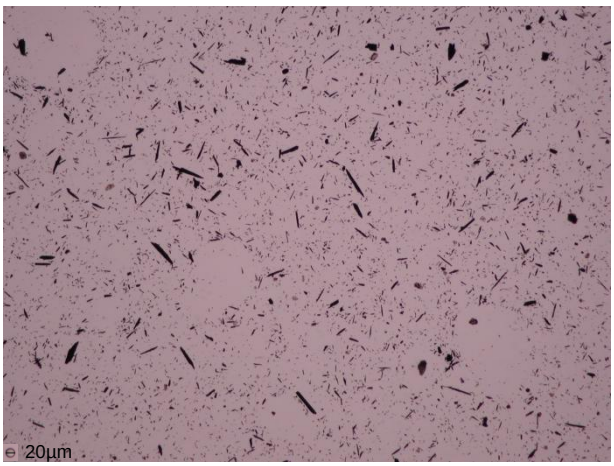



10x

**Acros (213490010):**

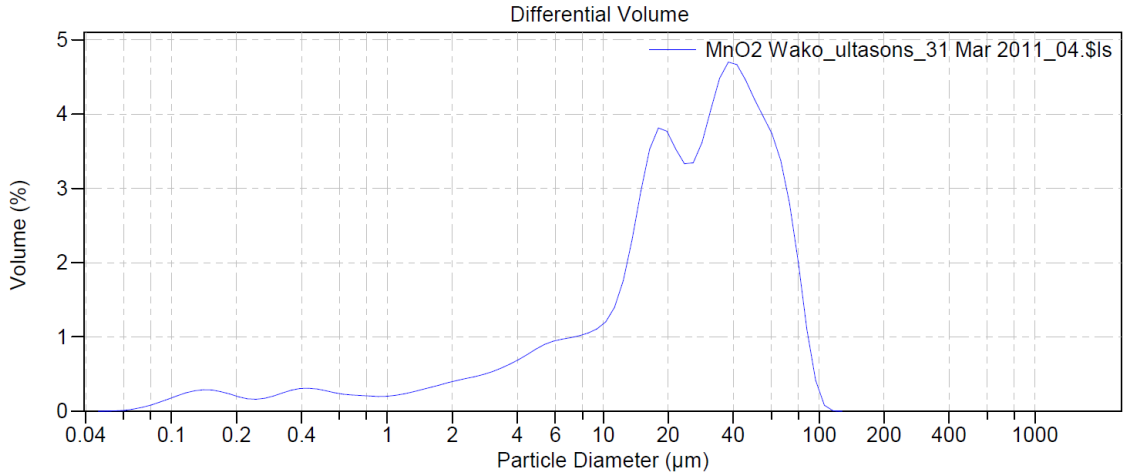



$d_{10}$: 1.509 µm $d_{50}$: 7.555 µm $d_{90}$: 37.30 µm
<75% 18.16 µm <95% 51.39 µm
<10 µm 57.3%

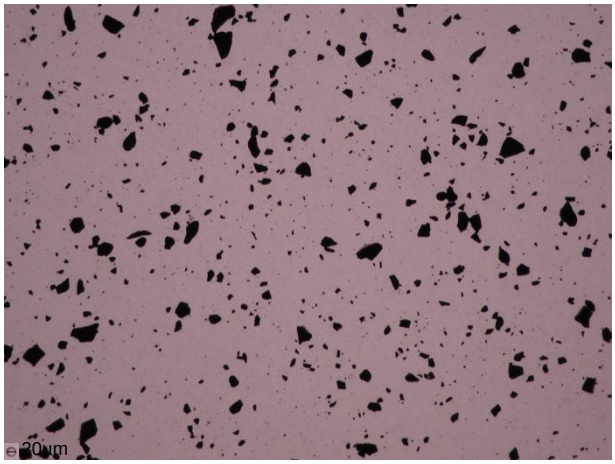



10x

**Wako (138-09675):**




$d_{10}$: 2.743 µm $d_{50}$: 25.70 µm $d_{90}$: 63.10 µm
<75% 44.77 µm <95% 73.05 µm
<10 µm 21.6%



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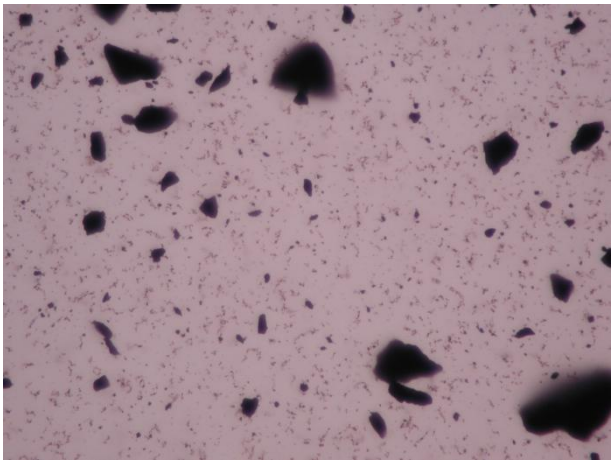
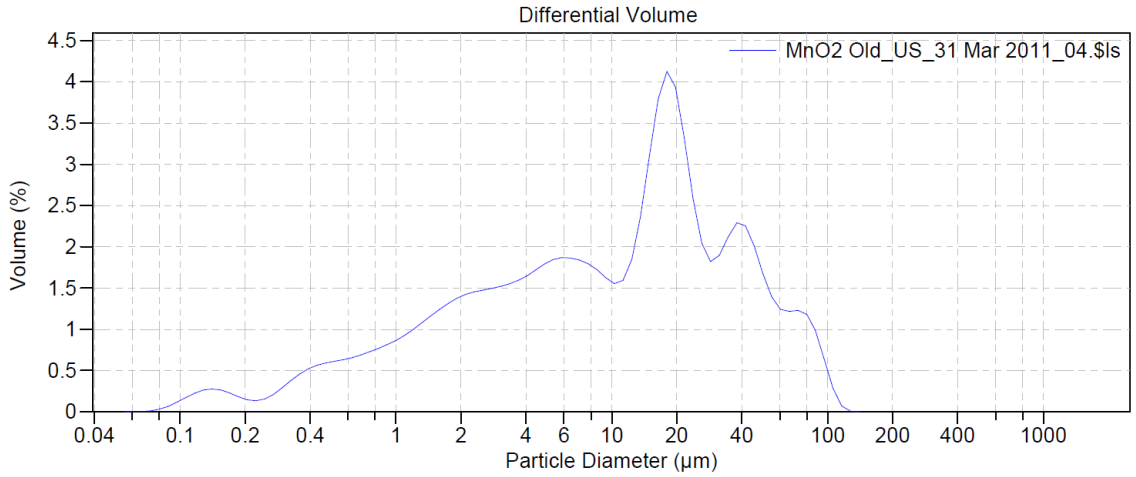
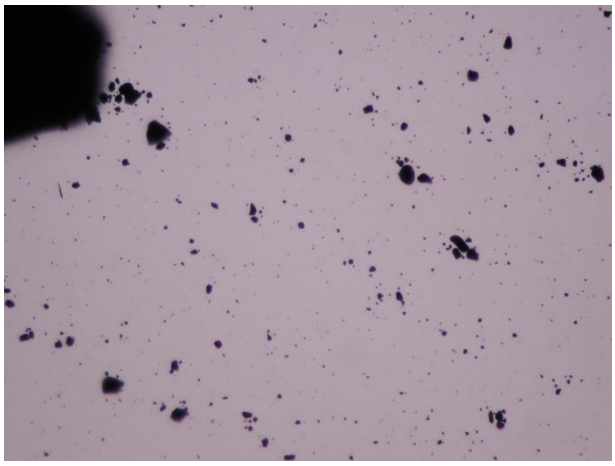


40x

**$MnO_2$ Old Sample:**




$d_{10}$: 0.932 µm $d_{50}$: 11.46 µm $d_{90}$: 47.78 µm
<75% 24.40 µm <95% 66.57 µm
<10 µm 47.7%



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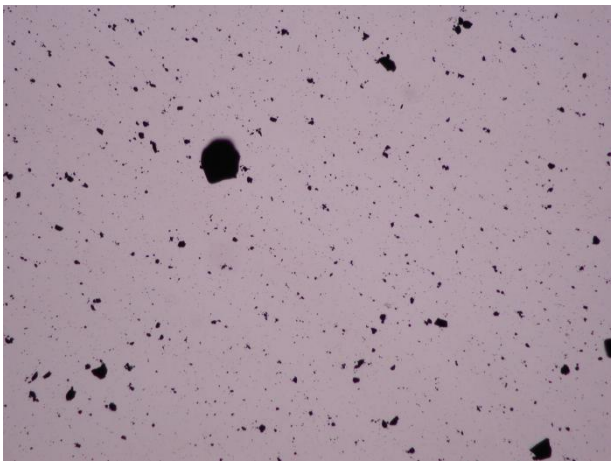

40x