| Struktura 1 |            |          |       |        |           |           |        |
|-------------|------------|----------|-------|--------|-----------|-----------|--------|
|             |            | m_śr [g] | F [N] | U [mV] |           | U_śr [mV] | Q [pC] |
| 1           | 45         |          |       |        | 27        |           |        |
| 2           | 50         |          |       |        | 20        |           |        |
| 3           | 48         | 48       | 0,48  |        | 13        | 20        | 30     |
| 4           | 154        |          |       |        | 64        |           |        |
| 5           | 151        | 450      | 4.50  |        | 76        | 66        | 00     |
| 6           | 145        | 150      | 1,50  |        | 58        | 66        | 99     |
| 7           | 189        |          |       |        | 86        |           |        |
| 8           | 195        | 102      | 1.02  |        | 77        | 77        | 110    |
| 9           | 194        | 193      | 1,93  |        | 69        | 77        | 116    |
| 10<br>11    | 276        |          |       |        | 120<br>86 |           |        |
| 12          | 276<br>276 | 276      | 2,76  |        | 94        | 100       | 150    |
| 13          | 445        | 270      | 2,70  |        | 137       | 100       | 130    |
| 14          | 443        |          |       |        | 171       |           |        |
| 15          | 439        | 442      | 4,42  |        | 137       | 149       | 223    |
| 15          | 433        | 442      | 4,42  |        | 137       | 149       | 223    |
| Struktura 1 |            |          |       |        |           |           |        |
| Lp. m       | [g]        | m_śr [g] | F [N] | U [mV] |           | U_śr [mV] | Q [pC] |
| 1           | 46         |          |       |        | 77        |           |        |
| 2           | 46         |          |       |        | 51        |           |        |
| 3           | 48         | 47       | 0,47  |        | 34        | 54        | 81     |
| 4           | 152        |          |       |        | 111       |           |        |
| 5           | 155        |          |       |        | 111       |           |        |
| 6           | 145        | 151      | 1,51  |        | 94        | 106       | 159    |
| 7           | 197        |          |       |        | 103       |           |        |
| 8           | 195        |          |       |        | 103       |           |        |
| 9           | 195        | 196      | 1,96  |        | 94        | 100       | 150    |
| 10          | 279        |          |       |        | 120       |           |        |
| 11          | 278        |          |       |        | 120       |           |        |
| 12          | 272        | 276      | 2,76  |        | 111       | 117       | 176    |
| 13          | 442        |          |       |        | 154       |           |        |
| 14          | 444        | 444      | 4.44  |        | 137       | 4.40      | 222    |
| 15          | 447        | 444      | 4,44  |        | 154       | 149       | 223    |
| Struktura 2 |            |          |       |        |           |           |        |
|             | [g]        | m śr[g]  | F [N] | U [mV] |           | U_śr [mV] | []a]   |
| 1           | 48         | 101      |       |        | 22        |           |        |
| 2           | 52         |          |       |        | 15        |           |        |
| 3           | 50         | 50       | 0,50  |        | 24        | 20        | 30     |
| 4           | 147        |          |       |        | 44        |           |        |
| 5           | 155        |          |       |        | 38        |           |        |
| 6           | 151        | 151      | 1,51  |        | 49        | 44        | 65     |
| 7           | 196        |          |       |        | 45        |           |        |
| 8           | 194        |          |       |        | 60        |           |        |
| 9           | 196        | 195      | 1,95  |        | 58        | 55        | 82     |

|           | 10    | 280 |         |       |        | 83  |           |        |
|-----------|-------|-----|---------|-------|--------|-----|-----------|--------|
|           | 11    | 277 |         |       |        | 82  |           |        |
|           | 12    | 275 | 277     | 2,77  |        | 83  | 82        | 124    |
|           | 13    | 445 |         |       |        | 120 |           |        |
|           | 14    | 452 |         |       |        | 127 |           |        |
|           | 15    | 443 | 447     | 4,47  |        | 129 | 125       | 188    |
| Struktura | 2     |     |         |       |        |     |           |        |
| Lp.       | m [g] | m   | _śr [g] | F [N] | U [mV] |     | U_śr [mV] | Q [pC] |
|           | 1     | 59  |         |       |        | 5   |           |        |
|           | 2     | 52  |         |       |        | 9   |           |        |
|           | 3     | 56  | 56      | 0,56  |        | 15  | 10        | 15     |
|           | 4     | 155 |         |       |        | 29  |           |        |
|           | 5     | 145 |         |       |        | 40  |           |        |
|           | 6     | 156 | 152     | 1,52  |        | 38  | 36        | 54     |
|           | 7     | 189 |         |       |        | 45  |           |        |
|           | 8     | 194 |         |       |        | 53  |           |        |
|           | 9     | 193 | 192     | 1,92  |        | 47  | 48        | 73     |
|           | 10    | 278 |         |       |        | 69  |           |        |
|           | 11    | 277 |         |       |        | 73  |           |        |
|           | 12    | 277 | 277     | 2,77  |        | 75  | 72        | 108    |
|           | 13    | 445 |         |       |        | 111 |           |        |
|           | 14    | 448 |         |       |        | 111 |           |        |
|           | 15    | 447 | 447     | 4,47  |        | 103 | 109       | 163    |
|           |       |     |         |       |        |     |           |        |

| d_33 [pC/N] | V [działki]                               | c_v [mV/dz] | p [Pa] | Działki max. |    |
|-------------|---|-------------|--------|--------------|----|
|             | 3   | 9,09        |        |              | 11 |
|             | 2,2                                       | 9,09        |        |              | 11 |
| 63          | 1,4                                       | 9,09        | 1517   |              | 11 |
|             | 7   | 9,09        |        |              | 11 |
|             | 8,4                                       | 9,09        |        |              | 11 |
| 66          | 6,4                                       | 9,09        | 4775   |              | 11 |
|             | 10  | 8,57        |        |              | 35 |
|             | 9   | 8,57        |        |              | 35 |
| 60          | 8   | 8,57        | 6133   |              | 35 |
|             | 14  | 8,57        |        |              | 35 |
|             | 10  | 8,57        |        |              | 35 |
| 54          | 11  | 8,57        | 8785   |              | 35 |
| <b>3</b> .  | 16  | 8,57        | 0,00   |              | 35 |
|             | 20  | 8,57        |        |              | 35 |
| 50          | 16  | 8,57        | 14059  |              | 35 |
| 30          | 10  | 0,37        | 14033  |              | 33 |
|             |   |             |        |              |    |
| d_33 [pC/N] |   | c_v [mV/dz] | p [Pa] | Działki max. | -  |
|             | 9   | 8,571428571 |        |              | 35 |
|             | 6   | 8,571428571 |        |              | 35 |
| 174         | 4   | 8,571428571 | 1485   |              | 35 |
|             | 13  | 8,571428571 |        |              | 35 |
|             | 13  | 8,571428571 |        |              | 35 |
| 105         | 11  | 8,571428571 | 4796   |              | 35 |
|             | 12  | 8,571428571 |        |              | 35 |
|             | 12  | 8,571428571 |        |              | 35 |
| 77          | 11  | 8,571428571 | 6228   |              | 35 |
|             | 14  | 8,571428571 |        |              | 35 |
|             | 14  | •           |        |              | 35 |
| 64          | 13  | 8,571428571 | 8796   |              | 35 |
|             | 18  | 8,571428571 |        |              | 35 |
|             | 16  | 8,571428571 |        |              | 35 |
| 50          | 18  | 8,571428571 | 14144  |              | 35 |
|             |   |             |        |              |    |
| 1 22 5 2/21 | V F 1 · · · · · · · · · · · · · · · · · · |             | . 10 1 | D 1-111      |    |
| d_33 [pC/N] | V [działki]                               | c_v [mV/dz] | p [Pa] | Działki max. |    |
|             | 2,4                                       | 9,090909091 |        |              | 11 |
|             | 1,6                                       | 9,090909091 | 4=00   |              | 11 |
| 60          | 2,6                                       | 9,090909091 | 1592   |              | 11 |
|             | 4,8                                       | 9,090909091 |        |              | 11 |
| _           | 4,2                                       | 9,090909091 |        |              | 11 |
| 43          | 5,4                                       | 9,090909091 | 4806   |              | 11 |
|             | 5   | 9,090909091 |        |              | 11 |
|             | 6,6                                       | 9,090909091 |        |              | 11 |
| 42          | 6,4                                       | 9,090909091 | 6218   |              | 11 |

|             | 9,1         | 9,090909091 |        |              | 11 |
|-------------|-------------|-------------|--------|--------------|----|
|             | 9           | 9,090909091 |        |              | 11 |
| 45          | 9,1         | 9,090909091 | 8828   |              | 11 |
|             | 14          | 8,571428571 |        |              | 35 |
|             | 14,8        | 8,571428571 |        |              | 35 |
| 42          | 15          | 8,571428571 | 14218  |              | 35 |
|             |             |             |        |              |    |
| d_33 [pC/N] | V [działki] | c_v [mV/dz] | p [Pa] | Działki max. |    |
|             | 0,6         | 9,090909091 |        |              | 11 |
|             | 1           | 9,090909091 |        |              | 11 |
| 26          | 1,6         | 9,090909091 | 1772   |              | 11 |
|             | 3,2         | 9,090909091 |        |              | 11 |
|             | 4,4         | 9,090909091 |        |              | 11 |
| 35          | 4,2         | 9,090909091 | 4838   |              | 11 |
|             | 5           | 9,090909091 |        |              | 11 |
|             | 5,8         |             |        |              | 11 |
| 38          | 5,2         |             | 6112   |              | 11 |
|             | 7,6         | 9,090909091 |        |              | 11 |
|             | 8           | 9,090909091 |        |              | 11 |
| 39          | 8,2         | 9,090909091 | 8828   |              | 11 |
|             | 13          | ,           |        |              | 35 |
|             | 13          | 8,571428571 |        |              | 35 |
| 36          | 12          | 8,571428571 | 14218  |              | 35 |

Obliczyc d33 Wykres zależności d33 od masy Obliczyć ciśnienie na próbkę

| 11 działek / 100V  |       |                                 |       |
|--------------------|-------|---------------------------------|-------|
| Zakres             | Znak  | Pojemność kondensatora          | 1,5   |
|                    | 100 - | Średnica elektrody              | 20    |
|                    | 100 - | g=10                            |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    | 300 - |                                 |       |
|                    |       |                                 |       |
| 11 działek / 100V  |       |                                 |       |
| Zakres             | Znak  |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + | Prawdopodobnie wpływ połączenia | na ul |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    | 300 + |                                 |       |
|                    |       |                                 |       |
| 11 daistal: / 1001 |       |                                 |       |
| 11 działek / 100V  | 7mals |                                 |       |
| Zakres             | Znak  |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |
|                    | 100 - |                                 |       |

100 -

- 100 -
- 100 -
- 100 -
- 300 -
- 300 -
- 300 -

## 11 działek / 100V

## **Zakres** Znak

- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 100 +
- 300 +
- 300 +
- 300 +

nF mm

dad pomiarowy