**Supporting Information**

# Understanding Organic Film Behavior on Alloy and Metal Oxides

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MALDI was used to determine if the films that were stable through rinse and sonication were monolayers. Only monomer peaks were seen in the spectrum correlating with monolayer deposition. Monolayers of carboxylic acid and phosphonic acid on SS316L were previously reported. Monolayers of phosphonic acids on Nitinol and nickel were previously reported. The chromium and manganese substrates are not appropriate for MALDI analysis due to their size.

| **ACIDS** | **Sulfonic acid** | **Phosphonic acid** | **Hydroxamic acid** | **Carboxylic acid** |
|---|---|---|---|---|
| *Metals* | | | | |
| Nitinol | ---- | 335.282 | ---- | ---- |
| Nickel | ---- | 335.279 | ---- | ---- |
| Titanium | ---- | 335.276 | ---- | ---- |
| Iron | ---- | 335.280 | ----- | 329.248 |
| Chromium | ---- | N/A | ----- | ---- |
| Molybdenum | ----- | 335.104 | 369.226 | ---- |
| Manganese | ----- | N/A | ---- | ----- |

**Table 1.** MALDI data for monolayers resistant to sonication.

Contact angle measurements were used to determine the hydrophobicity of the surface after rinsing of the modified substrates. Contact angles of the unmodified but sanded and cleaned substrates are in Table 1 below.

| Metal | Contact Angle (°) | Standard Deviation |
|---|---|---|
| SS316L | 54 | 3 |
| Nitinol | 46 | 3 |
| Nickel | 68 | 7 |
| Titanium | 35 | 1 |
| Iron | 74 | 2 |

**Table 2**. Contact angle data for control substrates.