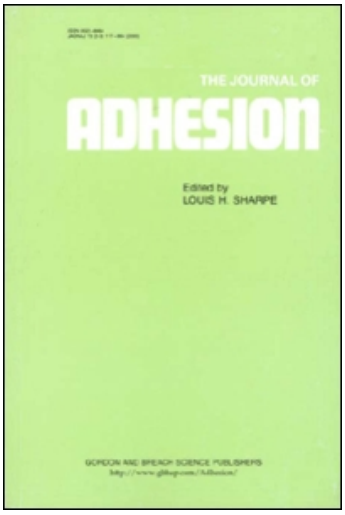

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Reply to Comments on "Sodium Hydroxide Anodization of Ti-6AI-4V Adherends"

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Reply to Comments on "Sodium Hydroxide Anodization of Ti-6Al-4V Adherends"

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We appreciate the interest of Clearfield and Davis in our work on Ti-6Al-4V adherends pretreated using sodium hydroxide anodization. The authors call attention to two main points, namely, the value of the O/Ti atomic percent ratio as determined by X-ray photoelectron spectroscopy (XPS) and the relative thickness of the oxide layers as determined by depth profiling with Auger electron spectroscopy (AES).

In point of fact, we made an error in calculating the results listed under the "PHI A.P." column in Table I. The corrected entries should read as follows: for SHA, C 1s–30, O 1s–48; Ti 2p–11, Si 2p–5.8, Ca 2p–5.5; for PSHA, C 1s–38, O 1s–46, Ti 2p–11, Ca 2p–5.7. The work was done on two different XPS spectrometers—the KRATOS which analyzes the photoelectron energies using a fixed retarding ratio and the PHI which analyzes the photoelectron energies using a fixed analyzer transmission. The equations to calculate atomic percentages are different for the two modes. We inadvertently used the same equation on data taken on the two instruments. We apologize for any inconvenience this error may have caused readers of our paper. The oxygen atomic percent is a total one and not based on curve fit analysis. However, the reported O/Ti ratio is based on the area of the curve fit peak at 530.3 ev assigned to TiO_2. The corrected ratios from the PHI data are 1.9 for

SHA and 2.2 for PSHA. We have made no further attempt to use modified instrumental sensitivity factors based on the XPS analysis of TiO_2 powders.

We noted in our paper that the SHA oxide thickness based on the long sputtering times with AES was not reasonable and suggested, as one possible explanation, differences in sputtering efficiency. A more likely possibility is that the beam size of our Auger spectrometer does not permit depth profiling of only a smooth area which evidently leads to a reasonable thickness as noted in the reply of Clearfield and Davis. Rather, our analysis area includes large aggregates (nodules) clearly seen in the high resolution SEM photomicrographs, thus taking a longer time to profile through to titanium metal.