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Figure 2.12 Temperature field inside an HA powder particle at flight in plasma jet and their possible crystal phase transformations on particle heating [261].

Figure 2.13 Schematic representation of the rutile crystal structure of TiO$_2$. The dark and light spheres correspond to Ti and O atoms, respectively ($a=4.594\text{Å}$, $c=2.958\text{Å}^\circ$) [277].

Figure 5.1 XRD profile of 316L SS.

Figure 5.2 XRD profile of Ti-6-4 alloy substrate [$\alpha$-Ti phase ($\alpha$), $\beta$- Ti phase ($\beta$)].

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Figure 5.27  Cross-sectional SEM and EDS elemental maps of flame sprayed HA-B coating on 316L SS (scale bar = 50 µm).

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Figure 5.30 Cross-sectional SEM and EDS elemental maps of flame sprayed HA-TiO$_2$ composite coating on Ti-6-4 alloy (scale bar = 50 µm).

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Figure 5.36 Failure surface images of coated surfaces for flame-sprayed (a) HA-A coating (b) HA-B coated (c) HA-TiO$_2$ composite coating and (d) HA/TiO$_2$ bond coating, [cohesive (co) and adhesive (ad) strength].

Figure 6.1 The potentiodynamic curves of flame-sprayed (1) HA-A coated (2) HA-B coated (3) HA-TiO$_2$ coated (4) HA/TiO$_2$ coated (5) un-coated, 316L SS specimens in Ringer’s solution at 37±1 °C temperature.

Figure 6.2 The potentiodynamic curves of flame-sprayed (1) HA-A coated (2) HA-B coated (3) HA-TiO$_2$ coated (4) HA/TiO$_2$ coated (5) un-coated, Ti-6-4 alloy specimens in Ringer’s solution at 37±1 °C temperature.

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Figure 6.17 FE-SEM along with EDS point analysis of flame spray HA/TiO$_2$ bond coating on 316L SS, after corrosion testing in Ringer’s solution.
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Figure 6.19  Cross-sectional SEM micrograph and EDS elemental maps of uncoated 316L SS after corrosion testing in Ringer’s solution (scale bar = 5 µm).

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Figure 6.24  Cross-sectional EDS elemental maps of flame spray HA-B coated Ti-6-4 alloy after corrosion testing in Ringer’s solution (scale bar = 20 µm).

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Figure 7.1  MTT assay results of polystyrene culture plates (control), high-velocity flame spray HA-A, HA-B, HA-TiO$_2$ and HA/TiO$_2$ coated 316L SS and Ti-6-4 specimens, after 7 days of incubation in culture medium. Each value and error bar represents the mean of triplicate samples and its
standard deviation.

Figure 7.2 MTT assay results of polystyrene culture plates (control), high-velocity flame spray HA-A, HA-B, HA-TiO$_2$ and HA/TiO$_2$ coated 316L SS and Ti-6-4 specimens, after 14 days of incubation in culture medium. Each value and error bar represents the mean of triplicate samples and its standard deviation.

Figure 7.3 SEM micrographs of flame sprayed HA-A coated (a) 316L SS and (b) Ti-6-4 alloy specimens after 14 days of incubation in culture medium.

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