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Microanalysis of pigments in ancient polychromic artworks for identifying original and fake

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Fake and forgeries is a serious crime that can only be corroborated through scientific acumen. Compositional characterization of the ancient pigments is significant for identifying the original and fakes. In the present work, 29 ancient painted samples from precious tombs, grotto, caves and paintings of Tang Dynasty (618-907 AD) and Ming Dynasty (1368-1644 AD) are characterized and evaluated for their elemental compositional patterns by inductively coupled plasma optical emission spectrometry (ICP-OES), and further confirmed by X-ray diffraction (XRD), Fourier transform Infrared spectroscopy (FT-IR) and the morphologies by optical microscopy (OM). The complex nature of inorganic components (23 elements in each) with minimal interferences is resolved and characterised for originality. These techniques empower us to conclude that 5 samples (white, blue and three black colors) out of 29 ancient samples are far from the originality, and possibly retouched with modern colors, while other 25 samples are quiet unadulterated. In these collected ancient samples, the most used pigments are miniumite (2PbO.PbO2) or red lead (Pb3O4), hematite (Fe2O3) and cinnabar (HgS) for red color, anglesite (PbSO4) with zinc white and gypsum (CaSO4.2H2O) for white color, malachite (CuCO3.Cu(OH)2) and atacamite (CuCl2.3Cu(OH)2) for green color and cobalt pigment for blue one. It is believed that the used methodology is an innovative to discriminate between original and fake.

Biography

Shahid Sultan has completed his Master Degree in Science at the age of 22 years from BZ University, Pakistan and currently in the final year of PhD at Xi'an Jiaotong University Xi'an China. He got the scholarship from Chinese Govt Scholarship to study archaeology and its conservation and protection. He has done valuable works in archaeological conservation sciences by synthesising nano pigment composites. He is very much intrested in seeking the oraginality and fakness of archaeological painted artefacts.

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