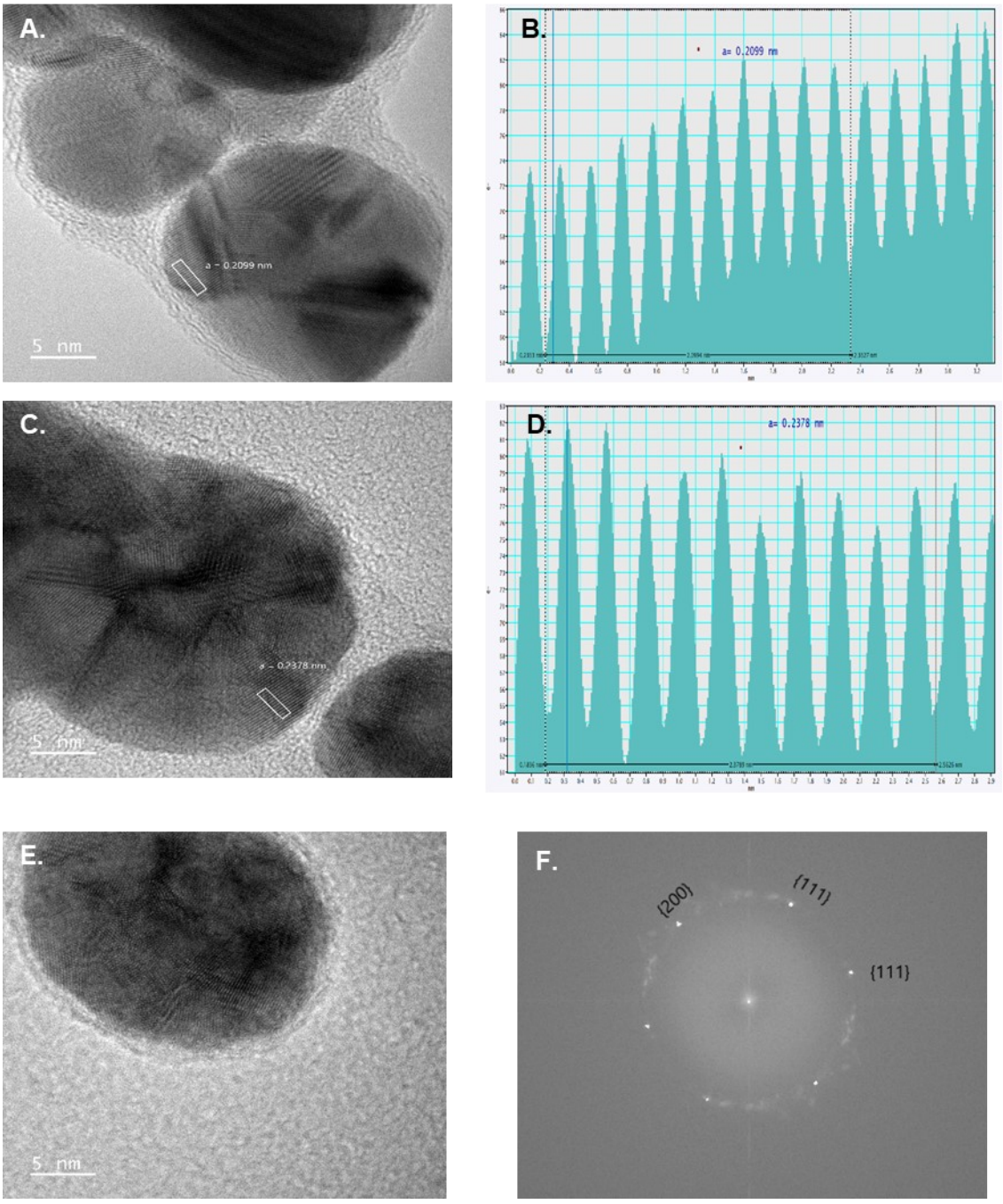
Supplementary Information (SI) for RSC Advances.
This journal is © The Royal Society of Chemistry 2025

High resolution transmission electron microscope analysis on silver nanoparticles



The synthesized silver nanoparticles were characterized using a JOEL JEM 2100 high-resolution transmission electron microscope (HR-TEM) at an accelerating voltage of 200 kV. To prevent particle agglomeration during TEM analysis, the liquid samples were diluted with ethanol.

Figure A presents a high-resolution image of silver nanoparticles, revealing their crystalline and spherical structure. The live profile of Figure A, shown in Figure B, indicates an interplanar spacing (d) of 0.2099 nm, corresponding to the (200) planes of the face-centered cubic (FCC) structure of silver (Reference 1). Figure D displays a line profile of Figure C, showing another plane with a d-spacing of 0.2378 nm, which corresponds to the (111) plane. These results confirm the successful synthesis of silver nanoparticles with a crystalline structure. Figure E shows a spherical silver nanoparticle with lattice fringes, indicating the arrangement of atoms across different planes. The Fast Fourier Transform (FFT) profile of Figure E, presented in Figure F, reveals the FCC structure of silver, with planes corresponding to the <200> and <111> orientations, drawn from the <011> zone axis (Reference 1). These findings further support the crystalline nature of the synthesized silver nanoparticles