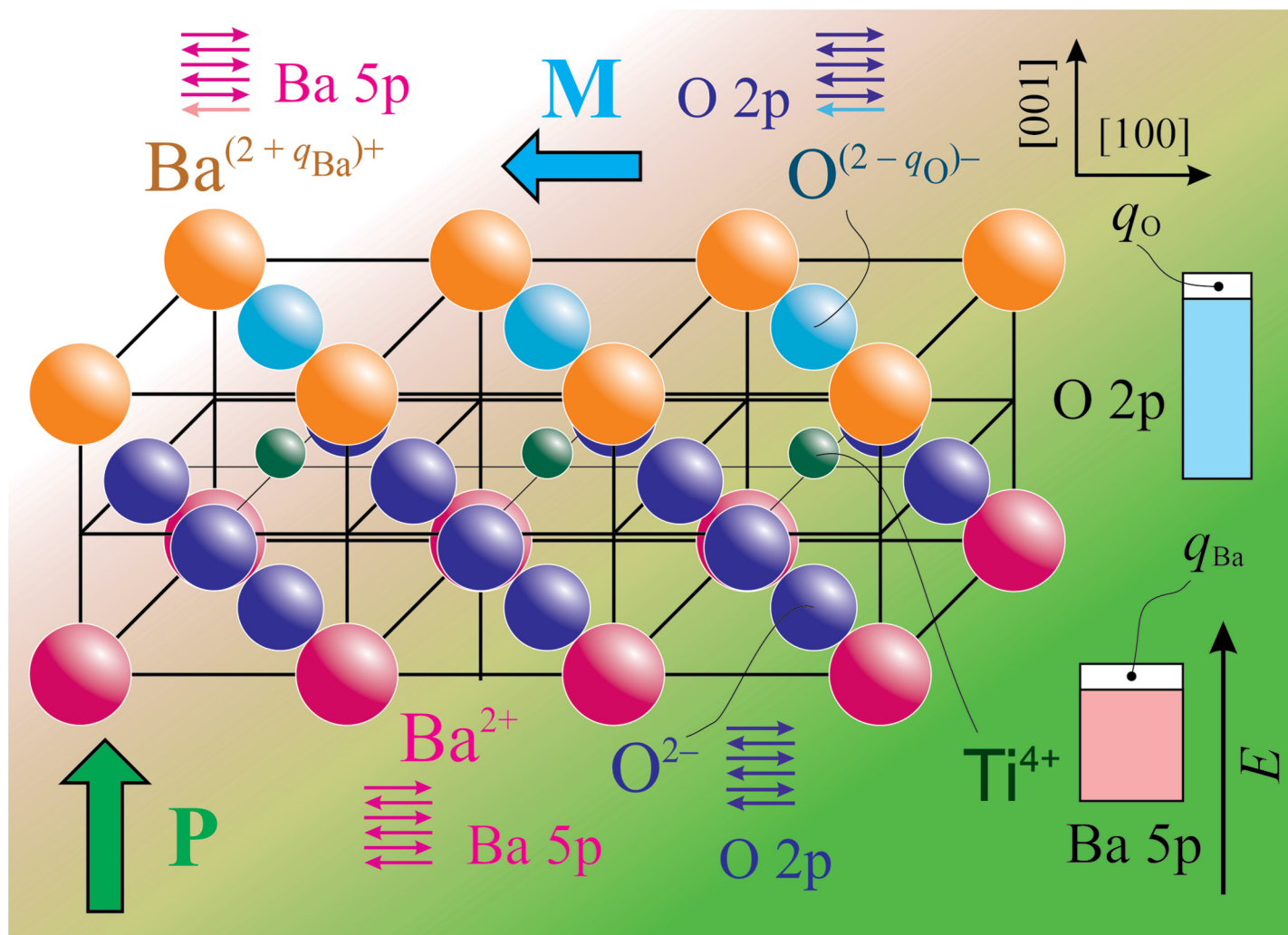




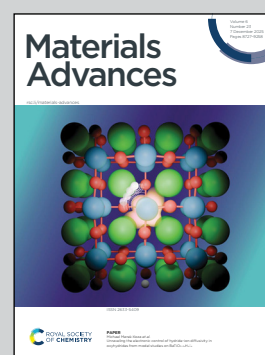
Showcasing research from Dr Cristian M. Teodorescu's laboratory, Surfaces and Interfaces, National Institute of Materials Physics, Măgurele, Romania.

Surface spin asymmetry of O 2p and Ba 5p states in BaTiO₃(001)

In its ferroelectric state, (001) oriented barium titanate with BaO termination features an electronic reconstruction with the surface layer positively charged. This positive charge is distributed almost evenly on the surface of Ba and O ions, yielding partially filled Ba 5p and O 2p orbitals. These orbitals feature uncompensated spins, enabling the formation of a detectable spin asymmetry. The fact that holes are stabilized on Ba 5p states, which are lower in energy than occupied O 2p states, may be regarded as a permanent population inversion induced by the ferroelectric state.

Image reproduced by permission of Cristian M. Teodorescu from *Mater. Adv.*, 2025, **6**, 8907.

As featured in:



See Cristian M. Teodorescu *et al.*, *Mater. Adv.*, 2025, **6**, 8907.