

Van der Waals Interactions in Force Microscopy

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Van der Waals (VDW) interactions arise, apart from permanent polarization effects, from instantaneous moments of atoms or molecules (Fig. 1). The quantum fluctuations involved are mostly in the UV range and play an important role in optical dispersion. In scanning force microscopy VDW forces are ever-present, but are, however, frequently masked by other contributions, such as short-range repulsive contact forces or long-range surface tension, electrostatic, and magnetostatic forces.