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Multiplex SERS Detection of Metabolic Alterations in Tumor Extracellular Media

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The composition and intercellular interactions of tumor cells in the tissues dictate the biochemical and metabolic properties of the tumor microenvironment. The metabolic rewiring has a profound impact on the properties of the microenvironment, to an extent that monitoring such perturbations could harbor diagnostic and therapeutic relevance. A growing interest in these phenomena has inspired the development of novel technologies with sufficient sensitivity and resolution to monitor metabolic alterations in the tumor microenvironment. In this context, surface-enhanced Raman scattering (SERS) can be used for the label-free detection and imaging of diverse

1. Introduction

Cancer cells and the stroma create dynamic pseudo-organs that contain a unique niche with distinct biochemical and physiological properties. During the progression of the disease, tumor and stromal cells exhibit bidirectional alterations in their interaction modes and patterns of co-evolution.[1] As a result, the mutations and signaling alterations in