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## The Chemical Analysis of Wood Using ToF-SIMS

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**Abstract:** Time-of-flight secondary ion mass spectrometry (ToF-SIMS) is a powerful technique that provides chemical information about the surface of a solid sample and does not need any pretreatments. The significant advantage of ToF-SIMS over other techniques is imaging analysis, which allows the direct visualization of the chemical distribution on the sample surface with submicrometer spatial resolution. Here the applications of ToF-SIMS to wood science are discussed. Recent studies showed that ToF-SIMS is a useful tool for the structural analysis of lignin by detecting the monomeric ions which correspond to its structural units (guaiacyl and syringyl types). Several ToF-SIMS studies that examined pulp fiber surfaces or properties of paper have been reported. ToF-SIMS has also been used to investigate the distribution of heartwood extractives.

**Keywords:** ToF-SIMS, lignin, extractives, surface analysis, cell wall



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