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### The use of ion-mobility spectrometry-mass spectrometry to elucidate polymer architecture

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The ability to characterize and differentiate polymers of diverse architecture or topology remains a challenge among polymer scientist. Traditional characterization techniques such as mass spectrometry can provide absolute molecular weight, while size exclusion chromatography can enable a determination of the hydrodynamic radius. By comparing these data, along with additional techniques such as viscometry, the extent to which a polymer exhibits a more collapsed or extended conformation can be determined. However, ion mobility spectrometry-mass spectrometry (IMS-MS) provides an attractive alternative to these approaches, as this single technique simultaneously separates the components of a polymer sample by both drift time (which correlates to the size for a given charge state) and molecular weight. The resolution provided in both of these dimensions is beneficial not only for determining the macromolecular architecture, but also in the more challenging problem of determining architectural purity. The application of IMS-MS to elucidating polymer architecture will be probed with a number of case studies including cyclic, branched, and linear polymers.

#### Biography

Scott M Grayson graduated from Chaminade College Preparatory. He came to Tulane for the first time to pursue Bachelor's degrees in Chemistry, Mathematics, and History in 1996, and then moved to the University of Bradford where he completed a Master's degree in Archaeological Chemistry under the direction of Professor Carl P. Heron in 1998. He completed his Doctoral studies in Chemistry in 2002 at the University of California, Berkeley with Professor Jean Frechet, developing new dendritic architectures for biological applications. He continued his training as a Post-doctoral researcher in the labs of C. Grant Willson, at the University of Texas at Austin developing new polymer materials for photolithography and biosensing, and has been an Assistant Professor at Tulane University since 2005.

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