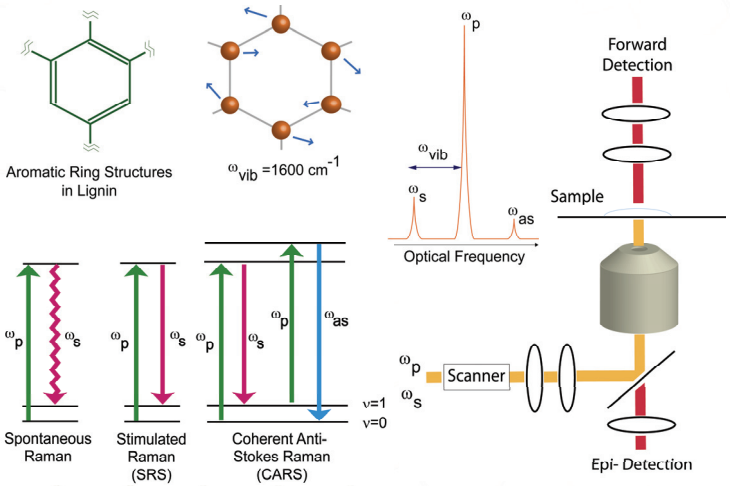
In Situ Chemical Imaging of Plant Cell Walls Using CARS/SRS Microscopy

Yining Zeng[1], Yu-San Liu[1], Brian G. Saar[2], X. Sunney Xie[2], Fang Chen[3], Richard A. Dixon[3], Mike E. Himmel[1] and Shi-You Ding[1]*

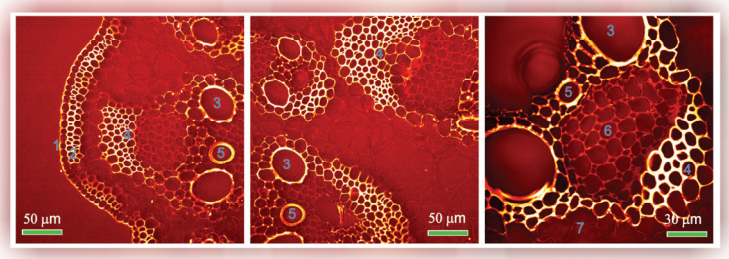
[1]National Renewable Energy Laboratory, Golden, CO; [2]Harvard University, Cambridge, MA; [3]The Samuel Roberts Noble Foundation, Ardmore, OK; In collaboration with: David Johnson, Qi Xu (NREL); Gary Holtom, Marcel Friedrich, (Harvard University); Arthur Ragauskas (Georgia Tech); Matthias Hess, Tao Zhang (JGI); Yunfeng Yang, Martin Keller (ORNL)

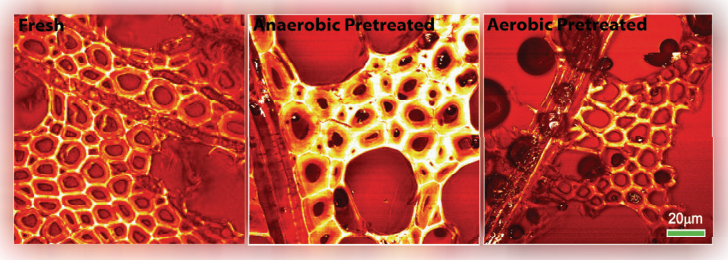
Coherent Anti-Stokes Raman Scattering (*CARS*) Stimulated Raman Scattering (*SRS*)



- Hand-cut samples; sample treatment is not necessary
- Fast imaging rate

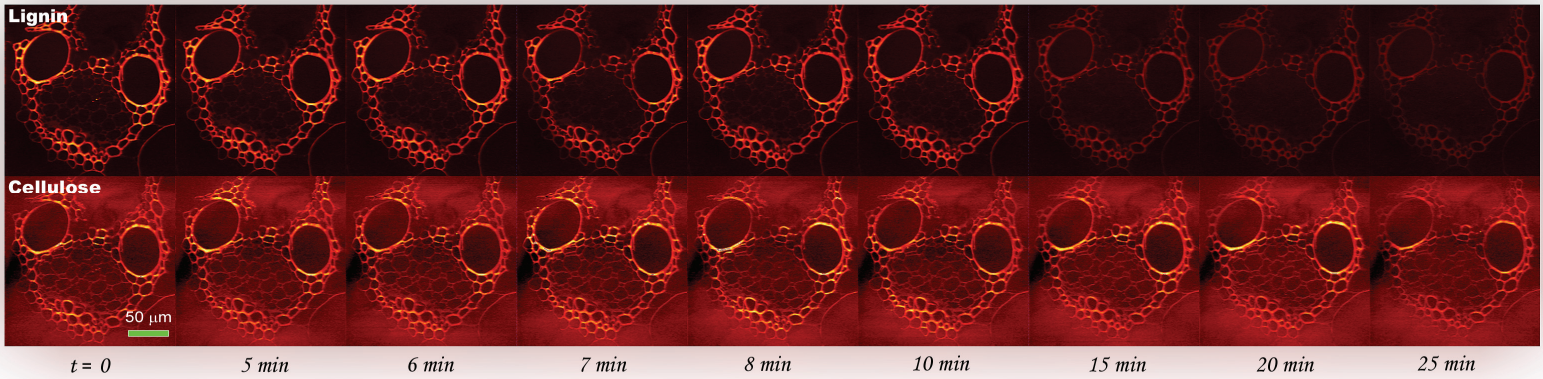
Imaging of Lignin in Plant Cell Walls





•CARS intensity reveals lignin content across corn stover cell wall in the order: Epidermis1, sclerenchyma fibers2 > Metaxylem3, Sclerenchyma4, Protoxylem5 >Phloem6 > Parenchyma7

Simultaneous Chemical Imaging of Lignin and Cellulose During Acidic Pretreatment (*Corn Stover*)



- Selectively chemical bleaching of lignin, while cellulose is preserved during the process. CARS microscopy provides a powerful tool to monitor real-time and *in situ* chemical changes during biomass conversion.

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