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Secondary Cell Walls at a Scarious Floral Leaf in Seven Plant Species Investigated by Transmission Electron Microscope (TEM), a Scanning Electron Microscope (SEM), and a Polarization Microscope Including *Helichrysum bracteatum*

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Cell walls of scarious floral leaf cells in seven plant species were investigated by transmission electron microscope (TEM), a scanning electron microscope (SEM), and a polarization microscope. Generally, floral leaves are composed of only primary cell walls. However, it was clarified that there were secondary cell walls showing orientation of cellulose microfibrils for all cells of scarious floral leaf in seven plant species investigated. The fine structures of secondary cell walls were observed in *Helichrysum bracteatum* L., *Acroclinium roseum* L., *Rhodanthe*

Xeranthemum annuum L. in the Compositae family formed a retic similar in morphology to secondary thickening of tracheary elements. *Gomphrena globosa* L. and *Gomphrena haageana* L. in the Am formed a layered structure similar to fiber. *Limonium sinuatum* L. family formed a folded structure similar to the sclereid of seed coat.

Key Words: [birefringence](#), [polarized light microscopy](#), [scanning e transmission electron microscopy](#)

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