

Reference list for *Geometrically-Frustrated Assembly* Lectures
G. M. Grason, July 20-23, 2026
Boulder School for Condensed Matter Physics

Overall lecture series (+ more citations):

G. M. Grason, "Perspective: Geometrically-Frustrated Assemblies", *J. Chem. Phys.* (2016), DOI: 10.1063/1.4962629 .

M. F. Hagan and G. M. Grason, "Equilibrium Mechanisms of Self-Limiting Assembly", *Rev. Mod. Phys.* (2021), DOI: 10.1103/RevModPhys.93.025008 .

Lecture 1 (Intro to Geometric Frustration):

J.-F. Sadoc and R. Mosseri, *Geometrical Frustration* (Cambridge Univ. Press), 2010.

R. D. Kamien, "Geometry of soft materials: a primer", *Rev. Mod. Phys.* (2002).

D. R. Nelson and F. Spaepen, "Polytetrahedral Order in Condensed Matter", *Sol. State Phys.* (1989).

D. C. Wright and N. D. Mermin, "Crystalline liquids: the blue phases", *Rev. Mod. Phys.* (1989).

Lecture 2 (Continuum theory of frustrated orientational and positional order):

Peliti and Nelson, "Fluctuations in membranes with hexatic and crystalline order" *J. Phys.* (1987)

Prost and Lubensky "Orientational order and vesicle shape", *J. Phys. II* (1992).

Giomi and Bowick, "Two Dimensional Matter: Order, Curvature & Defects", *Adv. Phys.* (2009).

Seung and Nelson, "Defects in flexible membranes with crystalline order", *Phys. Rev. A.* (1988).

Schneider and Gompper, "Shapes of crystalline domains on spherical fluid vesicles", *Euro. Phys. Lett.* (2005).

G. M. Grason, "Perspective: Geometrically-Frustrated Assemblies", *J. Chem. Phys.* (2016).

Lecture 3 (Size and shape selection of assembling frustrated domains):

Schneider and Gompper, "Shapes of crystalline domains on spherical fluid vesicles", *Euro. Phys. Lett.* (2005).

G. M. Grason, "Perspective: Geometrically-Frustrated Assemblies", *J. Chem. Phys.* (2016).

Hackney, Amey and Grason, "Dispersed, Condensed and Self-limiting States of Geometrically Frustrated Assembly" *Phys. Rev. X* (2023).

Meng, Paulose, Nelson and Manoharan, "Elastic Instability of a Crystal Growing on a Curved Surface", *Science* (2014).

Hall, Bruss, Barrone and Grason, "Morphology selection via geometric frustration in chiral filament bundles", *Nature Materials* (2016).

Lecture 4 (Mechanisms of frustration escape to bulk assembly):

Seung and Nelson, "Defects in flexible membranes with crystalline order", *Phys. Rev. A.* (1988).

Li, Zandi, Travasset and Grason, "Ground states of crystalline caps: Generalized jellium on curved space", *Phys. Rev. Lett.* (2019).

Grason, "Defects in Crystalline Packings of twisted filament bundles: I. Continuum theory of disclinations", *Phys. Rev. E.* (2012).

Ghafouri and Bruinsma, "Helicoid to Spiral Ribbon Transition", *Phys. Rev. Lett.* (2005).

Armon, Aharoni, Moshe and Sharon, "Shape selection in chiral ribbons: from seed pods to supramolecular assemblies", *Soft Matter* (2014).

Hall, Stevens and Grason, "Building blocks of non-Euclidean ribbons: Size-controlled assembly via discrete frustrated particles", *Soft Matter* (2023).

Hall and Grason, "How geometric frustration shapes twisted fibres, inside and out: competing morphologies of chiral filament assembly", *Interface Focus* (2017).