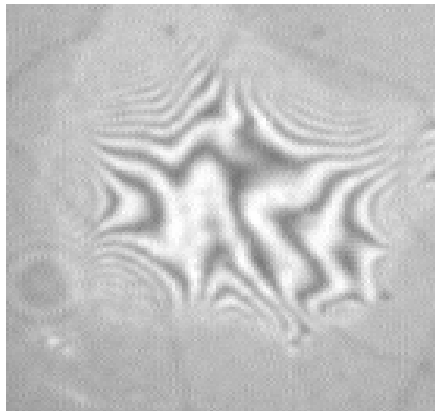


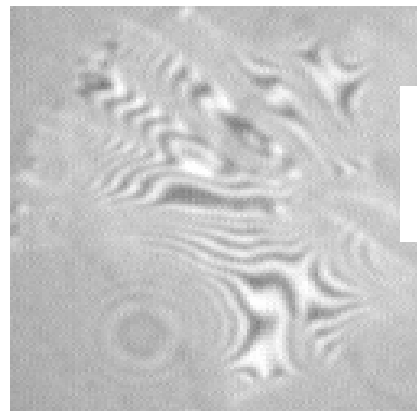
Applications Note AN-009

Beware of Plastic Membranes at High Power!!

Tests in our laboratories compared a 2-micron silicon nitride stretched membrane to a 12 micron stretched polyimide membrane. Both membranes were heated in a horizontal posture with the same stress applied (the weight of a very smooth ball bearing) and the results noted. At a temperature of only 200°C, the polyimide showed **permanent plastic deformation** both visibly and under inspection with an optical interferometer. The silicon nitride did not show similar deformation even when heated further to 400°C, probably because it was produced in a furnace at temperatures as high as 3000°C giving it an inherent capacity to handle very high temperatures.

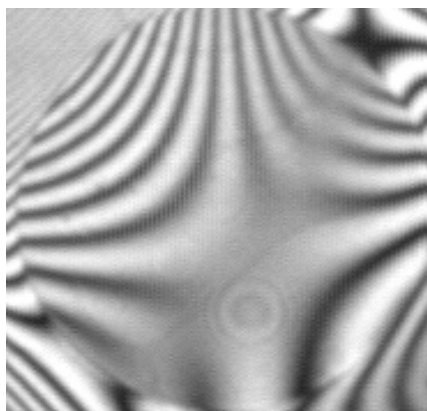


Polyimide before temperature cycling

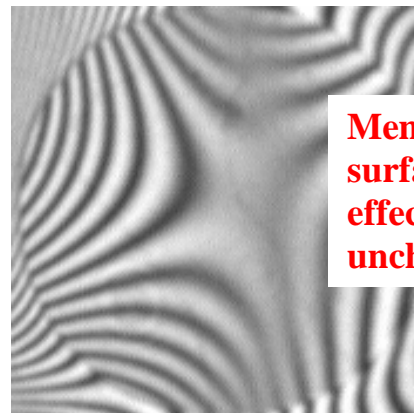


Permanent diagonal striations!

Polyimide after loading and temperature cycling to 200°C



Nitride before temperature testing



Membrane surface effectively unchanged

Nitride after loading and cycling to 400°C