NASA TECH BRIEF

Correction for Losses in Optical Birefringent Networks, a Concept

Existing techniques for synthesizing optical birefringent networks of anisotropic crystals are based on the assumption that light is transmitted through each of the birefringent crystals of a network without losses. In practice, however, absorption and reflection losses occur in each crystal, which are generally different for "fast" and "slow" axis components of the light beam. These losses result in a distortion of the shape of the network transmittance as well as an overall decrease in amplitude.

A technique has been conceived which allows one to determine the effects of these losses upon the performance of a birefringent network and, even more importantly, shows how the desired amplitude transmittance of the network may be corrected (or predistorted), prior to synthesizing the birefringent network, to prevent the effects of crystal losses.

Notes:

1. This technique appears to be limited to the synthesis of single-pass birefringent networks.
2. Related information is contained in Tech Briefs 68-10260, *Technique Developed for Measuring Transmittance of Optical Birefringent Networks* and 68-10275, *Synthesis of Electro-Optic Modulators for Amplitude Modulation of Light.*
3. Additional documentation is available from:
   Clearinghouse for Federal Scientific
   and Technical Information
   Springfield, Virginia 22151
   Price $3.00
   Reference: B68-10571

Patent status:

No patent action is contemplated by NASA.

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