A study on 1-D photonic crystals composed of oxide multilayers
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of Physics, Sunmoon University, Asan, Korea — Multilayers, consisting of oxide
layers, have been designed for 1-D photonic crystals. The optical transfer behavior
at normal incidence was calculated in the visible range. The computed results show
that the complete reflectance can be achieved when the structural repetition number
is large enough. The more the number of periods is, the better control over the fine
details of spectral reflectance profile is found. It is interesting that a defect mode
can be obtained when the half-wavelength-thick layer is sandwiched symmetrically
by two quarter-wavelength-thick layers. More defect modes are observed when the
sandwiched layer is magnetic. However, no defect mode is formed when the thickness
of sandwiched layer is a quarter wavelength. The designed multilayers were also
fabricated to confirm the predicted properties.

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Date submitted: 25 Nov 2004

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