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(71) Applicant: **NIPPON TELEGRAPH AND TELEPHONE CORPORATION**
Tokyo, 100-8116 (JP)

(72) Inventors:
- **Goh, Takashi**
  NTT Intellectual Property Center
  Musashino-shi
  Tokyo 180-8585 (JP)
- **Abe, Makoto**
  NTT Intellectual Property Center
  Musashino-shi
  Tokyo 180-8585 (JP)
- **Inoue, Yasuyuki**
  NTT Intellectual Property Center
  Musashino-shi
  Tokyo 180-8585 (JP)
- **Okuno, Masayuki**
  NTT Intellectual Property Center
  Musashino-shi
  Tokyo 180-8585 (JP)
- **Saida, Takashi**
  NTT Intellectual Property Center
  Musashino-shi
  Tokyo 180-8585 (JP)

(74) Representative: **Roberts, Gwilym Vaughan et al**
Kilburn & Strode LLP
20 Red Lion Street
London WC1R 4PJ (GB)

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(54) **Interferometer and its fabrication method**

(57) An interferometer includes a waveguide core (2), and thin film heaters (4a, 4b) with widths W1 and W2. The thin film heaters are mounted directly above the waveguide core, and operate as two types of different annealing regions. The annealing, which is carried out by supplying current to the thin film heaters (4a,4b), can alter the quality of the cladding (3), and change the stress applied on the waveguide core (2), thereby making it possible to control the polarization dependency. Thus changing the width of the thin film heaters (4a, 4b) and/or the amount of the supply current thereto enables the permanent control of the effective refractive index (birefringence index) independently in the transverse electric polarization mode and the transverse magnetic polarization mode. This enables the transverse electric polarization mode to be adjusted to a phase difference of $\lambda/2$, and the transverse magnetic polarization mode to a phase difference of zero.

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