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#### 4. Conclusions

In conclusion, we report the alignment of a NLC on a flexible PDMS substrate in planar alignment. We accomplished this by coating the PDMS diffraction grating with a thin SiO layer. This surface treatment combined with a modified cover glass enables the full in plane alignment of the NLC. All-optical experiments were carried out to characterize and monitor the versatility of the process and showed that the SiO coated gratings exhibit an enhanced time-domain performance compared with the bare PDMS surfaces.

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