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Patterned Polymer-Metal Ion Complexes

JONATHAN HOFFPAUIR¹, NAGA KORIVI, PRATUL AJMERA, Department of Electrical & Computer Engineering, Louisiana State University, Baton Rouge, LA 70803 — The doping of polymers with metal ions has been of interest due to the possibility of tailoring their electrical, optical and mechanical properties. Such tailored polymers have potential applications in a variety of areas including flexible electronic devices and systems, optical systems such as those for holography, data storage, and mechanical systems. To extend the applications of metal doped polymers to novel micro-devices and systems, it is pertinent to develop methodologies to pattern or structure such polymers in small dimensions, often in the micro-scale. We report on the development of micro-patterned thin films of polyvinyl alcohol (PVA) doped with copper (Cu^{2+}) ions. The films were patterned in the micro-scale dimensions and larger by contact printing onto a substrate. Patterned Cu^{2+} doped PVA films were also made by combining solution casting with micro-molding. Raman spectroscopic analysis of the developed Cu^{2+} doped PVA films revealed the presence of PVA- Cu^{2+} complexes. Further characterization of the Cu^{2+} doped PVA films for electrical conductivity and x-ray diffraction is in progress and will be presented. The doping of PVA by other metal ions is also being explored and initial results will be presented.

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