Characteristics analysis according to the relative humidity of the $CoCl_2$ /PVP material for POF humidity sensors prepared by the bulk polymerization

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Recently, the electronic components industry, packaging industry and machines · automotive industry are growing in importance for humidity control. One of the many humidity sensing method, optical fiber humidity sensing method has many advantage that is available in danger or explosive environments and does not electromagnetic interference. Poly vinyl pyrrolidone has a highly hygroscopic property and little difference in the refractive index of the PMMA POF(Plastic Optical Fiber).
$CoCl_2$ /PVP humidity sensing material was prepared by the bluk polymerization method from the 1-vinyl-2-pyrrolidone and can be applied to the Optical fiber humidity sensor. Scanning electron microscopy(SEM), Differential scanning calorimetry(DSC) and UV-vis spectrophotometer were employed to characterize the morphology, thermal properties and optical characteristic change according to the relative humidity (RH%) of material.