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COMPACT AND FLEXIBLE OPTICAL SENSOR DESIGNED FOR ON-LINE MONITORING

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A new on line Optical Sensor based on light scattering dedicated to real-time monitoring during processing of polymers blends and polymers Nano composites has been developed. The sensor is designed to monitor the quality of the dispersed phase in the case of polymer blends or of a dispersion of Nano fillers in a polymer matrix during the process of compounding. This sensor presents three openings: two for light sensor setups (one for transmission measurements and the other for 90°-scattered light measurements) and one for the incident laser beam. The experimental validation of this optical sensor has been realized on two compounds: Polymethyl Methacrylate (PMMA) and Polypropylene (PP) Nano composites obtained by the melt mixing of those polymers matrix with modified Montmorillonite (MMT) clays. Experimental results proved the good results in terms of signal repeatability and sensitivity to Organoclay particles concentration and structures of Nano composites respectively.