IMAN SOLTANI (Polymer Scientist & Engineer)
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PROFESSIONAL EXPERIENCE

Polymer Engineering Post-Doctoral Research Associate, University of Minnesota, Minneapolis, MN 4/2016-present

- Blending polymers & melt-blowing nanofibers for advanced filtration applications, and investigating their morphological (microscopy & image analysis), physical mechanical, and (shear & extensional) rheological properties.

Polymers & Nanomaterials Research Assistant, North Carolina State University, Raleigh, NC 1/2011-4/2016

- Developed new FDA-approved and optically clear nanocomposites with superior barrier properties against CO_2 & O_2, by improving the adhesion between polymer bulk and nanoparticles through developing a variety of novel methods.
- Improved barrier properties of cast polymer membranes and thin films through coating processes as Layer-by-Layer Deposition, using electrostatic interaction of various polymer electrolytes, being aided by plasma treatment process.
- Proficiently conducted various characterization techniques to investigate physical and barrier properties, and melt flow behavior of novel polymer nanocomposites, through working with sorption and permeation cells, rheometry, SEM, microtomy, TEM, STEM, Optical Microscopy, ImageJ, XRD, DMA, DSC, TGA, Instron.
- Tutored and supervised undergraduate students with their research & taught courses in polymers thermodynamics.

Plastics, Elastomers, Composites R&D Engineer, Renault-Nissan Car MFG Co. Plant at IKCo. 1/2002-1/2011

- Founded and led the Plastics, Rubbers, & Composites Engineering Group.
- Established novel plastic/rubber hybrid composites with superior physical, mechanical, and rheological properties, through growing brushes, grafting, compounding, and processing of a variety of polymeric blends and composites.
- Processed and compounded polymer blends and hybrid composites with various pieces of equipment, like single and twin-screw extruders, batch mixer, banbury, injection molding, thermoforming, calendering, and milling.
- Designed (CAD), processed engineering polymer (blends, composites, textiles) (mainly based on PA, PP, PET, PBD, PU, ABS) vehicle parts (under bonnet & interior trim parts), & performed quality control tests (ISO, ASTM) on them.
- Directed various characterization techniques for different polymeric blends, composites, and textiles including, SEM, mechanical testing (Instron, impact), (capillary, rotational, oscillatory) rheometry, DMA, DSC, TGA, HDT, FTIR.
- As the Design MGMT consultant, recommended optimized polymers and processes, in various car design projects.
- Improved the crash resistance of vehicles, through leading research & feasibility study along with communicating & collaborating with major chemical companies, Dow, Henkel, & BASF to apply impact absorbent polymeric structural foams in vehicle pillars, to be processed at the online paint-shop plant simultaneously with other paint processes.
- Performed design, evaluation, quality control, and troubleshooting, for chemical processes and materials involved in the online automotive paint-shop, like sealers, PVC under-body, cavity wax, damping sheets, and coatings.
- Experienced with different techniques of making polymeric composites, like hand-lay-up, RTM, SMC, BMC, GMT.
- Taught engineers, polymers processing, their properties, and their characterization techniques at the education center.
- Designed technical documents as Design Method Request, Test Plan, Product Design Specification, Bill of Materials.

Polymer Engineering Intern, General Tire & Rubber Co. 3/2001- 9/2001

- Designed and processed different elastomer compounds through working with equipment like banbury, mixer mill, calendering, and conducted various tests for tire and controlled their quality.

EDUCATION

Ph.D., Polymer & Fiber Science & Nanotechnology, North Carolina State University, Raleigh, NC 2016
Dissertation: Using Layer-by-Layer Coating and Nanocomposite Technologies to Improve the Barrier Properties of Polymeric Materials, Needed for Packaging Applications. Supervisor: Prof. Richard Spontak

MS, Polymer Engineering & Science (Polymer Processing), IPPI 2004
Thesis: Investigating Morphology & Rheology of Novel Nylon66/Glass-Fiber/EPDM rubber Graft Composites, with Superior Mechanical Properties.

BS, Polymer Engineering & Science (Polymer Processing), Amirkabir University of Technology 2001

OTHER SKILLS

Computer: MS Office, MS Access, MS Project, XMind, Data Analysis, CATIA, Inventor, Solid Works, Mold Flow, Origin, Kaleidagraph, MATLAB, LabVIEW, RefWorks, EndNote, Photoshop, Inkscape, Design of Experiment.
Languages: English: proficient; French: intermediate

HONORS, & AFFILIATIONS

Member of Honor Society of Phi Kappa Phi (ΦΚΦ), Am. Inst. Chem. Eng. (AIChE), Mat. Res. Soc. (MRS), Am. Phys. Soc. (APS), Am. Chem. Soc. (ACS), & ASTM, also Vice-President (NCSU Chapter) of Soc. Plast. Eng (SPE).