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Poster 082

 INTERACTION IN NBR/CEL II SYSTEMS DETERMINED BY KRAUS AND
 CUNNEEN-RUSSEL EQUATIONS

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Nanocomposites of nitrile rubber (NBR) and cellulose II were obtained from mixtures of nitrile rubber latex and cellulose xanthate. Cellulose II content was varied from 0 to 30 phr in the composites with NBR rubber with low and medium acrylonitrile contents. Crosslink density was estimated by means of equilibrium swelling experiments by using Flory-Rehner theory. Based on the swelling experiments the interaction NBR-cellulose was quantified by Kraus and Cunneen-Russel equations. The results obtained permitted to conclude that the rubber-filler interaction in these systems increased with the filler amount, being stronger for the lower acrylonitrile content NBR rubber.

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 PARTICLE SIZE INVESTIGATION ON NATURAL RUBBER FROM DIFFERENT
 CLONES OF BRAZILIAN IAC SERIES

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Hevea brasiliensis species are being investigated in order to increase the production of natural rubber and to develop new clones more appropriate to specific soil and climate. Particle size of natural rubber from *Hevea brasiliensis* (Willd. ex Adr. de Juss.) Muell. - Arg. coming from new clones from the IAC series (IAC 405, 406, 410, 413, 420, 300, 301, 302, 303, 56, and 40) and from RRIM 600 (used as a control) has been studied using laser light scattering and scanning electronic microscopy (SEM). The results have shown that the average size of rubber particles varies within and among clones. In average, the particle size of clones from Votuporanga city is larger than that of those from Mococa city. The rubber particles of IAC clones exhibited predominantly a spherical shape characteristic of *Hevea* and other rubber species.

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 MECHANICAL BEHAVIOR OF THE NR COMPOSITIONS VULCANIZATES WITH
 A NEW ACCELERATOR

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In this work, the mechanical behavior of natural rubber (NR) compositions vulcanized with the substance ZNIBU, tetrabutyl ammonium bis(4-methylphenylthiocarbimatezincate-2) was evaluated. It was used a conventional system with sulphur and carbon black as reinforcement filler. The compositions had been prepared on a two-roll mill, and abrasion strengths, hardness and resilience tests were carried out, in accordance with ASTM standards. Compositions with commercial accelerators CBS (N-cyclohexylbenzothiazylsulphenamide), MBTS (Dibenzthiazyl disulphide) and TMTD (Tetramethyl thiuram disulphide), also had been gotten for comparison of the results.

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USE OF AMIANTHUS AS FILLER IN HDPE

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Amianthus (fibrous silicate) was chemically modified with silane, in a concentration of 1% (p/p). A composite with polyethylene was obtained in Haake Rheomix 600 at 160°C. The concentrations of modified amianthus were of 0.1, 0.2, 0.5, 1.0, 2.0 and 5.0%. Composites with asbestos (not chemically modified) were also obtained to compare the properties with the modified material. The composites had their thermal, mechanical and morphologic properties studied. It was observed that the addition of the chemically modified amianthus increased the module of the composites, when compared to the composites obtained with the asbestos not chemically modified. Crystallinity presented a trend to decrease in function of the concentration of added filler. However, this decrease was larger for the composites obtained with the asbestos not chemically modified.

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 DYNAMIC MECHANICAL ANALYSER AND MORPHOLOGY OS
 HDPE/AMIANTHUS COMPOUNDS

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Amianthus (fibrous silicate) was chemically modified with silane, in a concentration of 1% (w/w). A composite with polyethylene was obtained in Haake Rheomix 600

at 160 °C. The concentrations of modified amianthus were of 0.1, 0.2, 0.5, 1.0, 2.0 and 5.0%. Composites with amianthus (not chemically modified) were also obtained in order to compare its properties with the modified material. The composites had their dynamical mechanical and morphologic properties studied. It was observed that with the increase of the concentration of the filler (chemically modified and unmodified amianthus) the storage and loss properties of the composites were also increased, being this behavior more noticeable when the chemically modified amianthus was used. The morphology of the compounds obtained showed that a better interaction of the filler to the HDPE was obtained when the amianthus used was chemically modified one.

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 PHASE BEHAVIOUR IN BLENDS OF POLY(HYDROXYBUTYRATE) AND
 POLY(METHYL METHACRYLATE -CO-VINYLPHENOL)

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The miscibility of polymer blends of bacterial poly(3-hydroxybutyrate) (PHB) with methyl methacrylate-vinylphenol copolymer (MMA-VPh) is investigated over the whole range of composition by means of differential scanning calorimetry (DSC) and dynamic – mechanical analysis (DMA). PHB/MMA-VPh blends were prepared with MMA-VPh copolymer with 55 mol% of vinylphenol monomer. It was observed by DSC and DMA analysis that PHB/MMA-VPh blends have two glass transition temperatures (Tg) which are shifted with respect to the Tg of pure components. The melting temperature (Tm) of PHB in PHB/MMA-VPh blends are depressed to temperatures lower than Tm of pure PHB. The degree of crystallinity X of PHB in S-Hema/PHB blends diminishes with the increase of copolymer content in blends with more than 40 wt% of MMA-VPh. We believe that melting point depression and Tg shifting in PHB/MMA-VPh blends are probably associated with morphological effects than partial miscibility between PHB and MMA-VPh copolymer.

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 CORRELATIONS BETWEEN MORPHOLOGY AND THERMAL-MECHANICAL
 PROPERTIES OF HDPE/LDPE BLENDS

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DMTA, DSC, WAXS and density were used to quantify the crystallinity and crystallite dimensions of specific grades of LDPE/HDPE blends. In virtue of the close agreement of the results obtained with the three techniques, an average degree of crystallinity was calculated, allowing the establishment of quantitative relationships between composition and crystallinity, and the shifting of the α -relaxation. Dimensions along the 110 and 200 planes were also correlated with shifting of the α -transition.

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 CHARACTERIZATION OF COMPOSITES BASED ON SILVER ANCHORED ON
 CROSSLINKED RESINS

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Two different commercial resins (Amberlite GT73 and Amberlite IRC748) were used for anchoring silver submicron particles. The free –SH and –N(CH₂COOH)₂ groups, respectively present on these resins, were used for the Ag⁺ chelation from aqueous solution. After chelating the Ag⁺ ions, they were reduced by using three different reductants: hydrazine, hydroxylamine and formaldehyde at pH @ 12. These binary materials were characterized by thermogravimetry (TG-DTG) and scanning electron microscopy equipped with backscattered scanning electron detector (SEM-BSE). Energy dispersive X-ray spectroscopy (EDAX) coupled to SEM allowed the observation of submicron silver particles on the internal and external surfaces of the composite microspheres as revealed by chemical microanalysis of emitted X-rays. The amount of incorporated silver was determined by titration method.

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 BLENDS OF PA6 AND LDPE: EFFECT OF PEGAA AND EMA-GMA
 COMPATIBILIZERS ON THE RHEOLOGY, MECHANICAL PROPERTIES
 AND MORPHOLOGY

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In this work, the effect of PegAA and EMA-GMA compatibilizers on the rheology, mechanical properties and morphology of PA6/LDPE blends was investigated. The composition of the blends was 80/20 (wt%) for PA6/LDPE binary blend and 80/10/10 (wt%) for PA6/Compatibilizer/LDPE ternary blends. Torque rheometry