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Preparation of zeolite-4A from Nagarparker kaolin Properties Measurements and Characterization

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Abstract—Zeolites are molecular sieves which are widely used as industrial material for the purpose of water treatment as adsorbent of gases, as catalyst, as an ion exchange because of its unique chemical structure and function. Zeolite-4A synthesized from Nagarparker kaolin by inserting sodium ions into its chemical structure using the ion exchange technique. Material exposed to 600°C for 2 hr in a furnace, 6 Molar NaOH added for synthesis. Developed zeolite characteristics discussed by using Fourier Transform Infrared Spectroscopy to check functional groups, X-ray Diffraction to find crystallinity and phase, and Scanning Electron Microscopy to check morphology. Tested for water adsorption capacity found 90% to test the dependability of kaolin as a raw material for zeolite production.

Keywords— Zeolite-4A, Metakaolin, Nagarparker Kaolin, Adsorption Capacity, Synthesis