

**Title:**

**<sup>31</sup>P Solid-state NMR of Cheese**

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NMR has been shown to be an interesting tool for investigating dairy foods, in particular cheese products, for which the method is non-destructive and well suited for investigating their compounds showing different structure and mobility during ripening. Solid-state magic angle spinning <sup>31</sup>P NMR spectroscopy was used to characterize the structure and composition of semi-hard cheeses. Assignment including overlapping resonances from mobile/immobile phosphorylated serine residues and inorganic calcium phosphates, has been realised using different NMR techniques (spin echo, cross polarisation and single pulse excitation) and by comparison with spectra of literature. Studies at various ripening stages and salt contents have been achieved in order to understand the impact of salt on the phosphates structures and mobility within the cheese matrix, as well as its influence in enzymatic activities.